Metro Emergency Radio Management Committee (MRAM)

800 MHz Radio Systems Standard Operating Procedures

Metro Emergency Radio Management Committee
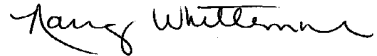# 800 MHz Radio Systems
Standard Operating Procedures

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800 MHz Radio Systems
Standards, Protocols, Procedures

Document Section:	**1. System Management**	Tech Committee Review
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Procedure Title:	**System Architecture**	
Date Established:	07/19/2007	MRAM Approval - Signature:
		Nancy Whitteman
Date Revised:	**3/8/2012**	Date: 7/19/2012

1. Purpose or Objective

To define the primary configuration, uses and users of the 800MHz Radio Systems used by Metro agencies and NES.

2. Technical Background:

Capabilities; The Metro/NES Radio Systems are composed of two individual sub-systems using different signaling protocols and infrastructure networks, while sharing common tower sites, shelters, and microwave backhaul system. These systems are designated as 'System A' and 'System B'. System A is an 18 channel, APCO P25 Phase 1 based system utilizing a 9600 baud control channel and all 8 tower sites. System B is a 14 channel, analog/digital system using the Motorola Astro signaling format on a 3600 baud control channel, and 7 tower sites.

- **Constraints:** To communicate on both radio systems, subscriber units must be capable of both types of signaling protocol.

3. Operational Context: System A is dedicated to public safety agencies and operations, while System B is used by public utility and public service users.

4. Recommended Protocol/ Standard:

5. Recommended Procedure:

6. Management

MRAM is responsible for the management of this policy.

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Document Section: Sub-Section: Procedure Title: Date Established:	**1. System Management** **1.1b** **Operational Management of the 800 MHz Radio Systems** 07/19/2007	Tech Committee Review Date: 03/08/2012 MRAM Approval - Signature: *Nancy Whiteman*
Date Revised:	**3/8/2012**	Date: 7/19/2012

1. Purpose or Objective
To assign responsibility of the operational management of the 800MHz Radio Systems.

2. Technical Background:
▪ **Capabilities**

Metro Radio Communications (MRC) is a division of Metro Nashville's Department of General Services. MRC is staffed with factory trained radio technicians and installation specialists. Senior level technicians are required to hold at least one of the following industry recognized technician certifications or licenses:

- FCC General Radiotelephone Operators License
- APCO Public Safety Technician Certification
- PCIA or NABER Technician Certification

Other certifications held by MRC technicians include:

- Emergency Vehicle Technician
- Radar Repair Certification
- Docu-Cam Installation

Additionally, all infrastructure and subscriber repair technicians receive regular, formal manufacturers training.

▪ **Constraints: N/A**

3. Operational Context:
MRC managers make decisions on issues related to the day-to-day operation of the systems and any urgent or emergency system operational or repair decisions.

An urgent or emergency situation is one where immediate decision authority is needed to allow the system as a whole, or any of the subsystem components, to continue supporting normal wide-area voice and data communications services. It is recognized that MRC staff may have to obtain authorizations from the Director of General Services to make longer-term or non-emergency capital or repair expenditure decisions.

MRC staff is responsible for the day-to-day management, operation and oversight of the systems. While specific duties are not detailed in this document, the general duties include:

1. Monitoring the systems and components for normal operations.

2. Diagnosis of system performance, problems, and the development of corrective action recommendations.

3. Dispatching appropriate repair services in the event of a malfunction of the system equipment.

4. Managing the database elements including subscriber IDs, talkgroup IDs, and the various parameters that relate to their effective operation.

5. Working with all agencies and agency technical staff to diagnose and resolve problems that involves radio operations, maintenance or repair of the equipment.

6. Being the point of contact with equipment manufacturers for issues related to the radio systems.

7. Providing timely information to system users on any issues that arise, or repair/maintenance issues related to system equipment that would affect normal radio operations.

8. Monitoring the performance of the entire network for normal operations.

9. Monitoring system databases for normal operations, and conducting regular database backups.

Due to the complexity and distributed administration and maintenance of the systems, problems can typically appear when changes are made to hardware or software. In order to keep all representatives informed of any updates, notifications are sent to all primary and alternate MRAM representatives in the event of any of the following:

1. Any planned maintenance work being done on the systems that affects performance for other representatives would be preceded with reasonable notification of the maintenance work being done.

2. Any equipment malfunctions or failures that affect system performance for other representatives of the systems.

3. Any configuration changes in equipment or software by any one of the agencies that affects system performance for any other agency.

4. Technical committee meetings that are held each month to review operations of the systems and share ideas or issues that have arisen that may be of interest to user agencies.

4. Recommended Protocol/ Standard:
This is an ongoing process for the management of the system.
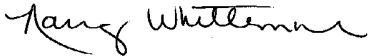
5. Recommended Procedure:
The specific procedures for performing these functions are either defined in the other standards procedures, and if not are at the discretion of the Director of General Services.
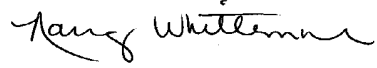
6. Management
MRAM is responsible for the management of this policy.

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Document Section:	**1. System Management**	Tech Committee Review
Sub-Section:	**1.2a**	Date: **03/08/2012**
Procedure Title:	**Network Management**	
Date Established:	07/19/2007	MRAM Approval - Signature:
		Nancy Whitteman
Date Revised:	**03/08/2012**	Date: 7/19/2012

1. Purpose or Objective
To define the responsibilities for network management.

The networks are composed of, but not limited to channel banks, hubs, switches, routers, servers, local area networks, and wide area network links connecting sites together consisting of microwave equipment, and the network management tools provided by the equipment manufacturers.

2. Technical Background:
▪ **Capabilities**
The system architecture is primarily constructed around standard Internet Protocol (IP) and Time-Division Multiplex Addressing (TDMA) based networks. The networks are composed of industry standard equipment, which also provides flexibility and a large variety of management and diagnostic tools.
   ▪ **Constraints**
The system network is complex and unusual problems may be difficult to identify and resolve. System documentation shall be kept up to date or it will loose its value in supporting the system network.

The system networks are protected from all other agency data networks to protect the security and functionality of the system. If there is a connection to another data network, it is through an appropriately designed and maintained firewall.

3. Operational Context:
The components of the networks are considered as "owned" by MRC, which is responsible for the maintenance of the sites and equipment. Agreements between MRC and maintenance contractors are at MRC's discretion; however, MRC is ultimately responsible for the system.

The backbone of the systems is structured on an integrated network. Any infrastructure hardware and software upgrades or changes that may impact the system will need reasonable discussion/approval by the technical committee of MRAM.

All maintenance work being scheduled that may affect system performance is preceded by reasonable and appropriate notification to the user agencies.

The configurations for each of the components of the system are documented primarily for the purpose of maintenance, but also affect future planning. The manufacturer provides the original 'as built' documentation.

The other defined standards for maintenance, documentation, notification, changes, security, and training also pertain to the network portion of the systems.

4. Recommended Protocol/ Standard:
This is an ongoing task in the operation and management of the systems.
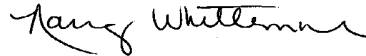
5. Recommended Procedure:

The methods for performing detailed system operations are defined in the technical resource manuals and training for the systems. The technical resource manuals are classified as 'Restricted Information' in accordance with Metro's Information Classification Policy, and are not available to the general public except by formal written request to MRC.

6. Management

MRC is responsible for managing the data attributes.

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Document Section:	**1. System Management**	Tech Committee Review
Sub-Section:	**1.2b**	Date: **03/08/2012**
Procedure Title:	**System Keys**	
Date Established:	07/19/2007	MRAM Approval - Signature:
		Nancy Whiteman
Date Revised:	**03/08/2012**	Date: 7/19/2012

1. Purpose or Objective

This policy outlines the procedures for the production, issue, and use of both the Software and Advanced System Keys (ASK) for the 800MHz Radio System. A system key allows for the programming of a radio for use on the system and is how system security is maintained by keeping unauthorized units from gaining access to the system.

2. Technical Background:

▪ **Capabilities**

Radio equipment manufacturers provides a unique software based system key as part of each system, which is required to be programmed into any radio that will access it.

▪ **Constraints**

A system key is required to program subscriber radios for a specific radio system. Without the proper system key, a radio is not able to communicate on the system.

3. Operational Context:

MRC will maintain and safeguard all Master ASKs, regardless of manufacturer, for the Metro P25 044B System. An agency using subscriber radios other than Motorola must acquire and provide to MRC the manufacturers Master ASK for the 044B System and all necessary software and key hardware to program secondary keys as needed. MRC is responsible for the production and issuing of all secondary keys to authorized users. Each secondary ASK will be programmed for only the subscriber ID and talk group ranges approved for that agency. No secondary ASK will be produced with an expiration date to exceed one year. All secondary ASKs will be password protected. Software system keys will be issued as required by MRC. Those radios requiring a software system key (i.e. all non Motorola brands) will only be programmed by MRC, an authorized agency, or authorized secondary vendor. The safeguarding of these keys is paramount and should at all times be treated as restricted, public-safety sensitive information with access closely guarded.

4. Recommended Protocol/ Standard:

ASKs will be issued to and signed for by the lead agency for the local, county, or state agency with authorized access. These key holders may sign out their key to agencies within their agency or to authorized secondary vendors to have their radios programmed. Each key holder should maintain a log of who the ASK was issued to, the date issued, the date returned, a signature, and a phone number. All copies of the system keys must be kept in secure areas within the control of the key holder, and only shared with those requiring knowledge of it for operational purposes. The keys are not available to anyone outside of MRC or authorized users, except by formal written request to MRAM, and are not to be released to any personnel not having a legitimate and appropriate need.

5. Recommended Procedure:

Once a radio is programmed the user agency will need to notify MRC and provide the following information: Agency, Radio User information, Radio Serial Number, Model Number, Flash Code, Radio ID Number (decimal & HEX), Radio Alias, and Date Issued. No radio will be turned on in the system until all requested information is received by MRC. MRC will activate radios within two working days of receipt of above information.

At the present time there are six organizations in the Greater Nashville area that share access to their systems with Metro subscribers via system keys access. These organizations are:

1. Metro Radio Communications (MRC)
2. Nashville Electric Service (NES)
3. Metro Airport Authority (via Wireless Solutions, Inc.)
4. Vanderbilt University (via Wireless Solutions, Inc.)
5. City of Goodlettsville (via Wireless Plus Inc.)
6. Tennessee Highway Patrol (THP)
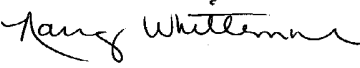
The above organizations have joint usage of each others system keys and a specified block of radio ID numbers, with ASK and subscriber information being programmed accordingly.

No copies of a system key will be issued to any other agency, unless authorized by MRAM and MRC.

6. Management
MRC is responsible for maintaining the security of and access to the system keys.

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Document Section:	**1. System Management**	Tech Committee Review
Sub-Section:	**1.3**	Date: **03/08/2012**
Procedure Title:	**Database Management**	
Date Established:	07/19/2007	MRAM Approval - Signature:
		[signature]
Date Revised:	**03/08/2012**	Date: 7/19/2012

1. Purpose or Objective
To define the responsibilities for managing the system databases.

The databases contain objects for the system and subsystems defining the operational characteristics of:
- Subscriber Radios
- Radio Users
- Talkgroups
- Profiles for Radio Users and Talkgroups
- Storm Plans.
- System portion of the fleetmap programming
- System and Subsystem equipment operational parameters
- Security Group structures
- Login User accounts and privileges

The databases do not contain equipment-programming parameters for such things as routers, switches, hubs, and channel banks etc. Nor do the databases contain the software load information of servers and client computers.

2. Technical Background:
▪ **Capabilities**
The system and subsystems contain a central database; however the management of the databases is distributed among the staff responsible for the various aspects of the data in the databases.

▪ **Constraints**
The databases contain the operational personality of the entire system, because of this critical function the data shall be properly managed for system functionality and archived regularly in case of data loss or corruption.

3. Operational Context:
The system databases are partitioned to facilitate the distributed management of the data contained in them, the system manager and/or administrators shall manage the portions of the "above listed" data.

MRC is responsible for maintaining and archiving a current copy of all radio codeplug data.

MRC staff backs up the system databases twice a week on Tuesday, and Friday.

Multiple revisions of backups are dated and kept in a rotating stock, so that a restore is possible from an earlier backup if the need arises.

Multiple database backups are made at least once per month and the tapes are kept "off-site" in the event of a building disaster.

Database restores are done by MRC and only in the event of system software reloading and version changes, system database corruption, or as defined in the Disaster Recovery section of this manual.

Database restores are performed where there is a need if a non-critical condition exists and if approved by the TC.

MRC notifies agencies of any database issues that may adversely impact their normal operations.

4. Recommended Protocol/ Standard:
This is an ongoing task in the operation and management of the systems.

5. Recommended Procedure:
The methods for performing the database operations are defined in the technical resource manuals for the systems. The technical resource manuals are classified as 'Restricted Information', and are not available to the general public except by formal written request to MRC.

The procedure for this standard is at the discretion of MRC.

6. Management
MRC is responsible for managing the data attributes and are responsible for backing up the system databases.

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Document Section: Sub-Section: Procedure Title: Date Established:	**1. System Management** **1.4a** **System Login** 07/19/2007	Tech Committee Review Date: 03/08/2012 MRAM Approval - Signature: *Nancy Whitteman*
Date Revised:	**03/08/2012**	Date: 7/19/2012

1. Purpose or Objective
Personnel which log into the systems to use applications and support tools are referred to as "Login Users". These are technical support staff such as the system manager, administrators, technical support staff etc. This is different than "Radio User" as referred to in other standards. Every user's login ID on the system is unique.

2. Technical Background:
▪ **Capabilities**

Every login user of the system has a minimum of one login account, possibly more if different levels of access rights are needed for different purposes, such as administrative or general use. Every account can be individually set with the security and application rights needed to meet the needs of each user.

▪ **Constraints**

All user account IDs shall be unique; the system databases do not allow duplicate IDs. The user login aliases are limited to a specific length.

3. Operational Context:
Every login user of the system has a user ID that is only for that individual's use. An individual may need more than one login ID.
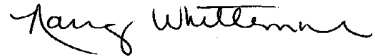
4. Recommended Protocol/ Standard:
The methods for performing the database operations are defined in the technical resource manuals for the system.

5. Management
MRC is responsible for the creation of administrative accounts, and MRC supervisors are responsible for subsequent creation of users.

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Document Section:	**1. System Management**	Tech Committee Review
Sub-Section:	**1.4b**	Date: 03/08/2012
Procedure Title:	**Alias List Standards**	
Date Established:	07/19/2007	MRAM Approval - Signature:
		[signature: Nancy Whitteman]
Date Revised:	**03/08/2012**	Date: 7/19/2012

1. Purpose or Objective
Login user, radio user and radio zone aliases are stored within system databases and are maintained by MRC.

2. Technical Background:
▪ **Capabilities**
Having the "Agency Alias" table readily available to MRC staff facilitates agency planning and assists agencies with reference information on identifying ownership of radio zones and users.
  ▪ **Constraints**
The "Agency Alias" table is kept in a central location and up to date.

3. Operational Context:
Radio users and zones are prefixed by an agency ownership acronym, as defined in the Naming Standards section of this manual. Depending on the agency name, the first two or three characters are specified in the naming standard. Additional agency subdividing in the acronym table is optional.

4. Recommended Protocol/ Standard: NA
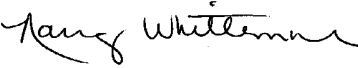
5. Recommended Procedure:
MRC manages the contents of the agency alias table.

6. Management
MRC is responsible for maintaining, archiving, updating and distributing the agency acronym table.

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Document Section: Sub-Section: Procedure Title:	**1. System Management** **1.5a** **Revisions and Changes to these Standards**	Tech Committee Review Date: 07/10/2009
Date Established:	07/19/2007	MRAM Approval - Signature:
Date Revised:	**03/08/2012**	*Nancy Whiteman* Date: 7/19/2012

1. Purpose or Objective
The purpose of this section is to define the process by which these standards, protocols and procedures shall be revised and/or changed.

This procedure addresses changes resulting from periodic procedure reviews or requests for additions, deletions or changes made by a participating department or agency.

2. Technical Background: N/A

3. Operational Context:
MRAM is charged with setting standards and determining protocols and procedures for the most optimal operations between and among the users of the Metro Nashville 800 MHz trunked radio systems.

The users fall into three groups:
- Metro and NES radio users with full system access
- Outside agencies with access to the systems for the purpose of interoperability with Metro agencies
- Outside agencies having access to the systems for the purpose of interoperability with Metro agencies, and also with dedicated talkgroups.

The ability to communicate among these groups is possible due to the interoperability agreements between Metro and the outside agencies.

4. Recommended Protocol/ Standard:
ROUTINE REVIEW
- Under the direction of the technical committee this manual of standards, protocols and procedures will be reviewed annually by an appointed task team to determine if changes are warranted.
- Upon completion of the review the task team will present to the technical committee:
  - ✓ Written report of all findings
  - ✓ Recommended changes.

SUBMITTED REQUESTS
- Requests to delete, add, and/or change adopted standards, policies and/or procedures shall be made in writing to MRAM. In the interest of time the MRAM Chair may direct a request for immediate consideration to the technical committee.
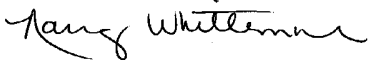
5. Recommended Procedure:
1. A written request for any change shall be sent to MRAM and shall include:
   - A full description of the deletion, addition, or change including section and sub-section references

- The reason for the change (including the potential consequences if the request is not approved)
- A preliminary assessment on other system users, and an estimate of associated costs, if any.

2. At the discretion of MRAM, the request can be forwarded to the technical committee for review, analysis and/or recommendation, or MRAM can take immediate action.

3. MRAM can direct the technical committee to conduct an assessment to address:
   - Technical impact to current and future system performance including which system or subsystems will be or may be affected.
   - Operational impact to current and future system performance including effects on system capacity and determination of those systems or subsystems that will be or may be affected.
   - Degree of conformance with MRAM plans and standards.
   - Cost impact to MRAM and current participants
   - Potential alternatives

4. The technical committee shall forward the completed assessment to MRAM along with recommendations including strategies to mitigate negative impacts, if appropriate.

5. MRAM shall advise all agencies of all requests along with potential impact and invite their comment.

6. MRAM shall approve, disapprove or modify the request. The committee shall notify all parties of their decision.

7. If approved, MRAM shall set forth operational and/or financial responsibility as appropriate and notify all parties.

6. Management
The MRAM Chair will manage this process.

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Document Section:	**1 – System Management**	Tech Committee Review
Sub-Section:	**1.5b**	Date: 03/08/2012
Procedure Title:	**Variances & Waivers**	
Date Established:	07/19/2007	MRAM Approval - Signature:
		Nancy Whitteman
Date Revised:	**03/08/2012**	Date: 7/19/2012

1. Purpose or Objective

The purpose of this section is to define the process by which variances or waivers to these standards, protocols and procedures are granted to a requesting agency.

▪ **Variance** is defined as an allowed divergence from full adherence to an adopted standard, protocol or procedure.

▪ **Waiver** is defined as a complete release from an adopted standard, protocol or procedure.

2. Technical Background: N/A

3. Operational Context:

MRAM is charged with setting standards and determining protocols and procedures for the most optimal operations between and among the users of the 800 MHz radio systems.

The users fall into three groups:

▪ Metro Government and Nashville Electric Service radio users with full system access

▪ Outside agencies having access to the systems for the purpose of interoperability with Metro agencies

▪ Outside agencies having access to the systems for the purpose of interoperability with Metro agencies, and having dedicated talkgroups for their own use.

The ability to communicate between these groups is possible due to the interoperability agreements between Metro and the outside agencies. The improper use of this equipment can have minor to grave consequences. These standards, policies and procedures were developed to maximize service to the citizens of Metro Nashville and the surrounding area, and minimize potential negative consequences. Therefore, variances and waivers shall not compromise the integrity of the 800 MHz Systems or participants.

4. Recommended Protocol/ Standard:

▪ Each request for variance or waiver from the adopted standards, policies and/or procedures shall be made in writing to MRAM.

5. Recommended Procedure:

8. The written request for a variance and/or waiver to MRAM shall include:
    ▪ Description of the desired variance or waiver including section and sub-section references.
    ▪ Reason for the variance or waiver (including the potential consequences if the request is not approved).
    ▪ Preliminary assessment on the other system users, and an estimate of any associated costs to implement the request.
9. At its discretion, MRAM may act on the request, but will generally forward requests to the technical committee for review, analysis and/or recommendation.

- The MRAM chair, or their designee, in consultation with the requesting agency and MRC staff, can approve a temporary variance or waiver until the official process is completed.
- Emergency deviations from the standards shall be communicated to all affected parties.

10. An assessment shall be conducted by the technical committee and shall address:
    - Technical impact to current and future system performance including which systems or subsystems are affected.
    - Operational impact including capacity impact to current and future system performance.
    - The degree of conformance with MRAM policies and standards.
    - Cost impact to current participants.
    - Potential alternative solutions.

11. Technical committee shall forward the completed assessment to MRAM along with recommendations including ways to mitigate negative impact if appropriate.

12. MRAM shall advise all affected agencies of all requests, along with potential impact and invite comments.

13. MRAM shall approve, disapprove or modify the request, and shall notify all affected parties of the decision.

14. If approved or modified, MRAM shall set forth operational and/or financial responsibility as appropriate and notify all affected parties.

6. Management

The chair of MRAM, acting on behalf of the committee, shall manage this process.

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Document Section: Sub-Section: Procedure Title: Date Established:	**1. System Management** **1.6** **System Security Groups** 07/19/2007	Tech Committee Review Date: 03/08/2012 MRAM Approval - Signature:
Date Revised:	**03/08/2012**	Date: 7/19/2012

1. Purpose or Objective
Security groups are used to protect the systems by managing the administrative access to the various objects in the system databases. A security structure using security groups is defined for the overall security and management of the systems.

2. Technical Background:
▪ **Capabilities**
All objects in the system databases are independently assigned to specific security groups. User login accounts are independently assigned various levels of access to the various security groups as needed. The security groups allow managing access rights to what users need to control and view. This protects overall system security and simplifies management of the systems.
▪ **Constraints**
Once a security group is created, it cannot be deleted, only renamed. The security group name field is limited to a specific length.

3. Operational Context:
Security groups are created which allow MRC to access and protect the objects in the database. Each agency on the system has a minimum of one security group. Additional security groups can be created as needed if there is a need to segregate objects into groups requiring different access privileges or different login users.

4. Recommended Protocol/ Standard:
A security group is created for each agency to place all of that agencies associated radios and users into for ease of tracking. Radio users are assigned to the security group of their primary agency affiliation.

5. Recommended Procedure:
The security group structure is part of the system planning process and was created as part of the fleetmap loading of the system. All additions and updates are managed by MRC.

6. Management
MRC is responsible for the security group structure on the system and is responsible for the usage of the security groups as defined in the procedure.

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Document Section: Sub-Section: Procedure Title: Date Established:	**1. System Management** **1.7a** **Subscriber Radio Standards** 07/19/2007	Tech Committee Review Date: 03/08/2012 MRAM Approval - Signature: *[signature]*
Date Revised:	**03/08/2012**	Date: 7/19/2012

1. Purpose or Objective
To set the minimum technical and performance standards for subscriber radios operating on the 800MHz Radio System. To establish a policy avoiding premature obsolescence of subscriber radios. To establish procedures for MRC to measure, test, certify and publish a list of subscriber radios which are approved for use on the system.

2. Technical Background:
▪ **Capabilities**

The 800 MHz Systems utilize digital and analog communication technology with the primary use being voice communications. System A utilizes the APCO P25 Phase 1 protocol, while System B uses a proprietary digital format, and a 3600 baud control channel. All voice communications utilize digital signaling, while telemetry data uses analog signaling on System B only.

▪ **Constraints**

Subscriber radios from different vendors often utilize different operating software providing a variety of services, features, functionality and performance to the users. Many of these radios interact differently with the infrastructure and can potentially exhibit undesirable operational characteristics. An example of an undesirable operational characteristic is poor simulcast audio recovery that results in reduced geographic range, garbled audio, etc.

It is also possible that new, unproven radios and/or software can exhibit performance and functionality characteristics that are destructive to the overall performance, capacity and/or security of the 800 MHz Systems.

3. Operational Context:
System users need access to radios that meet operational needs for the lowest cost. Users need the flexibility and knowledge to optimally choose from available radios, and at the same time be discouraged from requesting radios which would be operationally undesirable, problematic, or not cost effective. Users are prohibited from using radios which are destructive to the system.
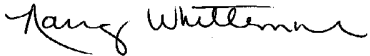
4. Recommended Protocol/ Standard:
Before a new radio is approved for use it must undergo testing on the system. Members of a radio test team are appointed by MRC and are responsible to conduct actual radio tests. Once sample radios are obtained, the testing process shall be completed as quickly and efficiently as practical so as to not delay the availability of new radios to users.

5. Management
MRC is responsible for managing this procedure including maintaining all testing and certification records, managing radio equipment manufacturer initiated submittals, and coordinating activities of the test team.   MRC maintains and has available a list of all radios approved for use on the system along with any limitations on use of the radio.

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Document Section:	**1. System Management**	Tech Committee Review
Sub-Section:	**1.7b**	Date: 03/08/2012
Procedure Title:	**Encryption**	
Date Established:	07/19/2007	MRAM Approval - Signature:
		Nancy Whiteman
Date Revised:	**03/08/2012**	Date: 7/19/2012

1. Purpose or Objective
Encryption of radios issued to Metro agencies is the responsibility of MRC. MRC shall provide encryption services to all approved agencies utilizing the 800 MHz Radio Systems as required.

3. Technical Background:
▪ **Capabilities**
Encryption is an option on digital radio equipment that must be specially ordered and manually configured. The Metro systems are capable of two forms of encryption, Advanced Digital Privacy (ADP), and Data Encryption Standard (DES). Depending on the level of encryption required, some radios are capable of storing multiple keys for different uses and situations.
▪ **Constraints**
Encryption comes in many forms, and can be system specific. Care shall be taken to ensure the type of encryption used is compatible with the system and other radios assigned. Radios transmitting in the DES encrypted mode can not be heard by dispatchers, ADP encryption users, or non-encrypted users. It shall be noted that due to the way that encrypted radios are programmed in the Metro system, use of the emergency or 'Code 5000' button causes the radio to jump to a dispatched and unencrypted talkgroup for handling of the emergency. DES encryption is only available to MNPD users and other law enforcement personnel as approved by MNPD staff.

3. Operational Context:
Metro owned radios with access to System A are equipped with ADP encryption, which is a 40 bit software based form of encryption. Certain radios assigned to MNPD personnel are also equipped with DES hardware encryption, which requires a special module or firmware option to be installed into each unit that provides a Department of Defense grade, 128 bit encryption scheme. Encryption keys will be loaded by MRC

4. Recommended Protocol/ Standard:
Primary dispatch and interoperable talkgroups will not be encrypted at any time to ensure interoperability with outside agencies. Each agency shall determine if encryption will be used on its own administrative and tactical talkgroups.

5. Recommended Procedure:
Agencies desiring to utilize ADP encryption shall coordinate with MRC. Agencies desiring to use DES encryption must coordinate with MNPD, who will provide MRC with a list of approved DES users that is updated monthly.

6. Management
MRAM will manage this protocol.

800 MHz Radio Systems
Standard Operating Procedures

Document Section: Sub-Section: Procedure Title: Date Established:	**1. System Management** **1.8** **Requesting System Access** 07/19/2007	Tech Committee Review Date: 03/08/2012 MRAM Approval - Signature:
Date Revised:	**03/08/2012**	Date: 7/19/2012

1. Purpose or Objective
Establishes the procedure for requesting agency access to the 800 MHz System, and access to other agencies individual talkgroups.

2. Technical Background:
▪   **Capabilities**

Certain radio makes and models are not able to access the Metro system. MRC shall be consulted to ensure the specified equipment can operate correctly and is approved for the system prior to submitting a request for access.
▪   **Constraints**

Each agency controls outside users access to the agency's individual talkgroups. MRC will not give access to any talkgroup without first having the written approval of the appropriate agency.

3. Operational Context:

4. Recommended Protocol/ Standard:
Requests for access to the 800 MHz radio system are submitted in writing to MRC, who will forward the request to all required parties for approval. If the requestor desires access to specific agency talkgroups other than their own, then the request shall include a full explanation of the expected use of those talkgroups requested, and a justification of the same.

5. Recommended Procedure:
The access request form in Appendix 2 should be used, or requested from MRC and completed by the requesting agency's representative, and returned to MRC for processing.

6. Management

MRC is responsible for the routine handling of the requests.

MRAM is responsible for final approval of requests after the agency has approved or denied the request. MRAM will not grant access if denied by an agency.

800 MHz Radio Systems
Standard Operating Procedures

Document Section:	**1. System Management**	Tech Committee Review
Sub-Section:	**1.9a**	Date: 07/10/2009
Procedure Title:	**Outside Agency Participation**	
Date Established:	07/19/2007	MRAM Approval - Signature:
		Nancy Whittemore
Date Revised:	03/08/2012	Date: 7/19/2012

1. Purpose or Objective
Establishes the procedure for an eligible outside agency, such as a local, state or federal agency, an adjoining county, an Emergency Medical Service (EMS) provider, or a special purpose governmental agency to apply for full participation in the 800 MHz system.

2. Technical Background:
▪ **Capabilities**
Agencies requesting participation shall be prepared to purchase, negotiate a lease agreement, or already own 800 MHz digital trunking radios approved by MRAM. In addition, participation could require the purchase and installation of additional equipment, features, and/or options in order to be compatible with Metro's system.
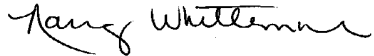
▪ **Constraints**
All agencies eligible to join the 800 MHz System shall do so in accordance with, and meet the requirements of, this manual. Operational plans shall be consistent with established standards.

Because of the limited number of available failsoft channels, outside agencies may not be granted a failsoft channel assignment, and will receive a lower priority for all talkgroup assignments, however interoperability access is not affected by this policy.

3. Operational Context:
Generally there are two ways to participate in the 800 MHz system, full participation and limited participation through interoperability. Limited participation through interoperability is possible by those agencies operating on VHF, UHF or 800 MHz analog systems. This procedure deals only with agencies seeking full participation.

4. Recommended Protocol/ Standard:
Requests for full participation shall be submitted in writing to MRAM, and be signed by the requesting agency director or department head.

5. Recommended Procedure:
The request shall provide an outline of plans the requesting agency has developed for full participation. The written request shall indicate the name and contact information for the person designated to lead the project.
The chair of MRAM or their designee shall forward copies of the request to the technical committee for review.

If a technical use plan is already in place, the agency shall submit the plan to the technical committee for review to ensure compliance and compatibility with MRAM's plan. If a technical use plan is not in place, MRC staff shall assist the requesting agency in developing a plan. Costs associated with the development of a technical plan are borne by the requesting agency. When the plan is complete it is submitted to the technical committee, which shall review the plan for compliance and compatibility with MRAM's plan. The technical committee shall then report its recommendations to the MRAM.
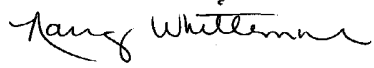
MRAM shall act on the request within a reasonable time period. MRAM can accept the request as submitted, accept the request with conditions or deny the request. If the request is initially denied, MRAM shall provide details on changes or additions to the plan that brings the plan into compliance with MRAM's plan.

Following making design changes that bring the agency's plan into compliance with the MRAM plan, the requesting agency can resubmit the request. MRAM can not deny the request if the design plan is compatible with MRAM's recommended changes or additions.

6. Management

The MRAM Chair is responsible for management of this procedure.

800 MHz Radio Systems
Standard Operating Procedures

Document Section:	**1. System Management**	Tech Committee Review:
Sub-Section:	**1.9b**	Date: 07/10/2009
Procedure Title:	**Requesting Limited Participation**	
Date Established:	07/19/2007	MRAM Approval - Signature:
		Nancy Whitteman
Date Revised:	07/10/2009	Date:07/16/2009

1. Purpose or Objective
Establishes the procedure for requesting limited participation in the 800 MHz radio system. Limited participation is normally defined as utilizing the system for interoperability with Metro agencies, and/or for purposes of mutual aid.

This procedure is not intended to restrict any authorized users from access to the 800 MHz conventional interoperability channels currently in use.

2. Technical Background:
- **Capabilities**

The eligible agency shall use only MRAM approved 800 MHz equipment capable of communicating on assigned and licensed public safety land mobile channels.
- **Constraints**

The eligible agency shall comply with any interoperability training requirements, and have access granted to individual agencies talkgroups on a per-case basis by those particular agencies.

3. Operational Context:
Interoperable communications between agencies is at the discretion of each talkgroup owner, and permission can be rescinded at any time by the talkgroup owner, MRC, or MRAM.

The Metro 800 MHz System has dedicated a specific radio zone for system-wide interoperability among all users assigned to the system, regardless of agency affiliation. This zone is available and programmed into every radio on the system, and is labeled as the 'A Zone' in all units.

While all government agencies in the metropolitan area are eligible to use the system, certain information shall be furnished to MRC for administrative and equipment programming purposes prior to commencing operations on any interoperability channel.

4. Recommended Protocol/ Standard:
Each agency shall submit a letter of intent to MRAM. MRAM shall approve the application when technical and training requirements are met.

5. Recommended Procedure:
Each eligible agency wishing to interoperate with full participants in the Metro system shall submit a letter of intent to MRC. The letter should contain information as to when the agency intends to begin using the system, which agencies they are requesting interoperability with and why, and indicate the name of the agency's radio representative, including contact information.

Following receipt of the letter of intent, MRC shall notify the radio representatives of the requested agencies and forward the documents for consideration. When MRC receives the responses back from the requested agencies, and is satisfied that the agency has met all technical and training requirements, a favorable recommendation is made to MRAM to approve the application.

MRC shall develop a directory that includes appropriate and necessary information for each agency including but not limited to: name and contact information for the agency's radio representative; licensed operating channels or talkgroups assigned to the agency, and any other information as determined by MRAM.

6. Management
MRC staff is responsible for managing and forwarding documents as appropriate. The technical committee is responsible for managing the review process. MRAM is responsible for approval actions.

800 MHz Radio Systems
Standard Operating Procedures

Document Section: Sub-Section: Procedure Title: Date Established:	**1. System Management** **1.9c** **Configuration Approval** 07/19/2007	Tech Committee Review Date: 05/10/2007 MRAM Approval - Signature: *Nancy Whitteman*
Date Revised:		Date:07/19/2007

1. Purpose or Objective
Establishes the procedure for obtaining approval of the technical design configuration developed by an agency requesting full participation in the 800 MHz system.

2. Technical Background:
▪ **Capabilities**
The technical design shall be consistent with and capable of operating on the backbone of the 800 MHz system.
  ▪ **Constraints**
The design plan shall be consistent with the capacity constraints of the system.

3. Operational Context:
This protocol provides guidelines for developing a design plan that is compatible with the overall plan adopted by MRAM.

4. Recommended Protocol/ Standard:
The requesting agency shall submit a document to MRAM providing complete details on plans for full participation in the 800 MHz system. The plan is subject to a review process, including but not limited to review by MRC, the technical committee, and MRAM.
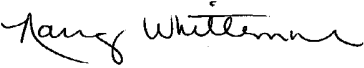
5. Recommended Procedure:
When the reviewers are satisfied that the plan meets the constraints of the 800 MHz system and is compliant with the standards inherent in the system, the plan shall be submitted to MRAM as part of its formal request for participation.

6. Management
The requesting agency is responsible for managing this procedure. The staff at MRC provides assistance and advice.

800 MHz Radio Systems
Standard Operating Procedures

Document Section: Sub-Section: Procedure Title:	**1. System Management** **1.10a** **Training – System** **Administrators**	Tech Committee Review Date: 05/10/2007
Date Established:	07/19/2007	MRAM Approval - Signature:
Date Revised:		Date:07/19/2007

1. Purpose or Objective

Establishes the minimum training standards for system administration and staff. This ensures that system functionality and integrity are maintained because only qualified personnel are performing and/or supervising system administration functions.

2. Technical Background: N/A

3. Operational Context:

System functionality and integrity shall be maintained by ensuring that only qualified personnel perform system administration functions.

4. Recommended Protocol/ Standard:

- MRC is responsible for maintaining system configuration databases for system or subsystem infrastructure, subscriber databases and console configuration databases. Therefore, MRC shall ensure that any personnel with access to those databases shall have successfully completed the appropriate training on the system management functions, or be closely supervised by the same.
- Appropriate training shall, at a minimum, include formal factory training, or locally by a qualified factory trained instructor.
- In addition, personnel responsible for the day to day data base administration (i.e., moves, changes, or additions to a system or subsystem subscriber database) are trained either at formal factory training or by a properly trained system or subsystem administrator.
- System access rights are not given to personnel that have not had the proper training.
- MRC shall maintain a list of training completed by technical staff.

5. Recommended Procedure:

This manual does not contain specific training procedures or training modules.

6. Management

MRC is responsible to ensure that:

- An appropriate training plan is developed for all technical and administrative staff
- Minimum training requirements are met
- Only qualified personnel perform system administration functions
- System administrators are familiar with all applicable sections of the system standards manual

800 MHz Radio Systems
Standard Operating Procedures

Document Section: Sub-Section: Procedure Title: Date Established:	**1. System Management** **1.10b** **Training - Technical Staff** 07/19/2007	Tech Committee Review Date: 05/10/2007
		MRAM Approval - Signature: *Nancy Whiteman*
Date Revised:		Date:07/19/2007

1. Purpose or Objective
Establishes the minimum training standards for system technical staff to insure system functionality and integrity is maintained by requiring system maintenance functions to be performed by qualified personnel.

2. Technical Background: N/A

3. Operational Context:
System functionality and integrity shall be maintained by ensuring that only qualified personnel perform system maintenance functions.

4. Recommended Protocol/ Standard:
- Technicians assigned to work on the infrastructure and/or subsystem equipment shall successfully complete appropriate training on all such equipment. Appropriate training shall, at a minimum, include formal factory training either at the factory or on-site, conducted by a qualified instructor or in the field with a senior technician. If factory training does not exist for a component of the system, the technician shall become familiar with the technical documentation, and receive on-the-job training from experienced techs on that type of equipment.
- In addition to training requirements for in-house technical staff, any technical staff from contracted service providers shall also meet the minimum training requirements for the equipment they are assigned to work on.
- Non-trained personnel shall perform no maintenance or repair work unless this work is performed under the direct supervision of a trained technician.
- Infrastructure systems and subsystem technical staff shall remain familiar with the site access procedures, equipment outage and maintenance notification requirements of this standards manual.
- MRC and Metro Human Resources shall maintain a list of technical training completed by technical staff.
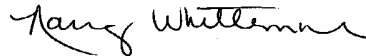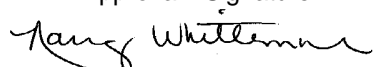
5. Recommended Procedure:
This manual does not contain specific training procedures or training modules.

6. Management
MRC is responsible to ensure that:
- Minimum training requirements are met
- Only qualified personnel perform system maintenance functions
- System technicians maintain familiarity with all applicable sections of this manual

800 MHz Radio Systems
Standard Operating Procedures

Document Section:	**1. System Management**	Tech Committee Review
Sub-Section:	**1.10c**	Date: 03/08/2012
Procedure Title:	**Training – Dispatcher**	
Date Established:	07/19/2007	MRAM Approval - Signature:
		[signature]
Date Revised:	**03/08/2012**	Date: 7/19/2012

1. Purpose or Objective

Establishes minimum training standards for dispatchers. This ensures that system dispatch operations are performed by properly trained dispatch personnel.

2. Technical Background: N/A

3. Operational Context:

System functionality and integrity shall be maintained by ensuring that only qualified personnel perform dispatch functions.

4. Recommended Protocol/ Standard:

- Dispatch personnel shall successfully complete appropriate training on the console system. Appropriate training shall, at a minimum, include formal training either by a dispatch trainer who has completed the training from a qualified instructor, or by a qualified factory instructor familiar with the agency's operations.
- Dispatch personnel shall be familiar with all applicable mutual aid requirements, interop requirements, and all established standard operating procedures.

5. Recommended Procedure:

This policy does not define the specific training procedures or training modules.

6. Management

ECC staff is responsible to ensure that:
- Dispatch personnel receive the appropriate training
- Only qualified personnel perform dispatch functions
- Dispatch personnel maintain familiarity with all applicable sections of the system standards manual

800 MHz Radio Systems
Standard Operating Procedures

Document Section: Sub-Section: Procedure Title:	**1. System Management** **1.10d** **Training – 800 MHz Radio** **Users**	Tech Committee Review Date: 07/10/2009
Date Established:	07/19/2007	MRAM Approval - Signature: *Nancy Whiteman*
Date Revised:	07/10/2009	Date:07/16/2009

1. Purpose or Objective
Establishes the minimum training standards for radio users, which ensures proper operation of radios on the system.

2. Technical Background: N/A

3. Operational Context:
System functionality and integrity shall be maintained by ensuring that only trained personnel operate radio equipment.

4. Recommended Protocol/ Standard:
▪ Radio users shall successfully complete appropriate training on assigned radios before being allowed to operate on the system. Appropriate training shall, at a minimum, include formal training from a qualified instructor.
▪ Radio users shall be trained on the technical operation of assigned radios.
▪ Radio users shall be trained on how to operate the radio within the 800 MHz radio system along with any special features of the system they will use, e.g. interconnect, private call, etc.
▪ Radio users shall be trained on and demonstrate familiarity with all applicable mutual aid requirements and interop requirements and standard operating procedures.
▪ MRC staff assists user agencies in identifying training needs and implementing training programs to meet those needs.
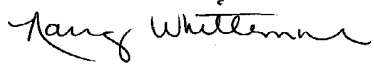
5. Recommended Procedure:
▪ This manual does not set forth the specific training procedures or training modules, however, MRC provides custom radio user training to all agencies as requested

6. Management
Each User Agency is responsible to ensure that:
▪ Personnel assigned radios receive the appropriate training
▪ Only trained and qualified personnel operate radio equipment
▪ Radio users are familiar with all applicable sections of the system standards manual

800 MHz Radio Systems
Standard Operating Procedures

Document Section:	**1. System Management**	Tech Committee Review
Sub-Section:	**1.10e**	Date: 07/10/2009
Procedure Title:	**Interop Training Standards – Non-Participating Radio Users**	
Date Established:	07/19/2007	MRAM Approval - Signature:
		Nancy Whitmore
Date Revised:	07/10/2009	Date:07/16/2009

1. Purpose or Objective:

Establishes the minimum training standards for radio users having access to interoperable talkgroups of this system which ensures the proper operation of radios on the system and safeguard against improper utilization of regional interoperability resources.

2. Technical Background: N/A

3. Operational Context:

System functionality and operability is maintained by ensuring that only properly trained personnel use the interoperable talkgroups on the 800 MHz system for interoperable/mutual aid communications. If non-participating agencies do not have appropriate training, then communications system failure or a degradation of system resources may occur.

4. Recommended Protocol/ Standard:

- Interoperable radio users shall have:
    - ✓ Successfully completed appropriate training and
    - ✓ Demonstrated knowledge of Section 3: Interoperability Guidelines.
- The end user training emphasizes:
    - ✓ The use of interoperable channels
    - ✓ How a non-participants radio experiences are affected by the digital 800 MHz system.
- The dispatch and supervisory training emphasizes:
    - ✓ The use of interoperable channels
    - ✓ The use of patching, and patched channels
    - ✓ The use of cross band repeaters and gateway devices
    - ✓ The use of RF control stations
    - ✓ How a non-participants radio experiences are affected by the digital 800 MHz system.
- Radio users with access to interoperable channels must be familiar with all applicable mutual aid requirements and interoperable requirements, and standard interoperability procedures.

5. Recommended Procedure:

This manual does not set forth specific training procedures or training modules.

6. Management:

MRC is responsible to prepare and maintain current training materials on the interoperable talkgroups approved by MRAM and to ensure that copies are available to non-participating radio users.

Agencies requesting and/or using the interoperable talkgroups are responsible to ensure that:

- Radio users successfully complete appropriate training and demonstrate knowledge of interop procedures before being allowed to operate the interoperable talkgroups.
- Radio users are familiar with all applicable interoperable sections of this manual.
- Radio users are familiar with all applicable mutual aid requirements and interoperable standard operating procedures.

800 MHz Radio Systems
Standard Operating Procedures

Document Section:	**2. Configuration and Allocation**	Tech Committee Review
Sub-Section:	**2.1a Naming Standards**	Date: 03/08/2012
Procedure Title:	**Radio Aliases**	
Date Established:	07/19/2007	MRAM Approval - Signature:
		Nancy Whitteman
Date Revised:	**03/08/2012**	Date: 7/19/2012

1. Purpose or Objective
Establishes the principle by which all agencies on the radio system determine an agency alias/acronym for their radios in order to ensure that there are no duplicates and to facilitate intuitive understanding of the acronym as it relates to the agency's name.

2. Technical Background:
- **Constraints**

Every radio user ID in the system shall be unique. There can be no duplicate IDs. The radio user alias field holds up to 14 characters and the legal values that the system can accept are: upper case alpha, numeric, period, dash, forward slash, and number sign.

3. Operational Context:
With the exception of the first few characters users are technically free to choose any unique name. However, since this is a shared system, radio user aliases that are programmed into the system shall have naming conventions for agencies that will not conflict with each other.

4. Recommended Protocol/ Standard:
In order to meet this need the radio user aliases are prefixed with an agency identification that are unique to that agency and identifies the agency and the associated radio user (PD=Police, PW=Public Works, etc...).

The naming standard for most agencies only govern up to the first three characters. The characters following the first three are at the individual agency's discretion, for example, the agency can opt to internally use more than two characters for the internal identifications.

The body of the alias contains an agency's identification for the individual or pool radio etc, possibly the radio user's call sign or employee number as an example. If a radio user has multiple radios on the system, each radio shall have a unique alias. The alias shall be suffixed with identification for the radio itself, such as a "P" for a portable for example to differentiate between a mobile & portable radio used by the same person. This allows dispatchers and MRC staff to readily identify radio users and if the radio is a portable or a mobile.

A master list of radio user aliases is maintained in the system, and the naming prefix template is maintained in Appendix 4. Radio user aliases are readily accessible through the data terminal. As alias names are created and approved, they shall be placed on the master list for operations and planning. (See Management Section 1.3 – Database Management & Upkeep)

5. Recommended Procedure: N/A

6. Management
MRC is responsible for following and maintaining the defined standard.

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Standard Operating Procedures

Document Section: Sub-Section: Procedure Title: Date Established:	**2. Configuration and Allocation** **2.1b** **Radio Zones** 07/19/2007	Tech Committee Review Date: 07/10/2009
		MRAM Approval - Signature:
Date Revised:	03/08/2012	Date: 7/19/2012

1. Purpose or Objective
The purpose of this section is to set forth the principle by which all agencies on the radio system establish a zone acronym to precede the talkgroup names in order to ensure no duplicates, and to facilitate intuitive understanding of the acronym relating to the agency's name.

2. Technical Background:
  ▪ **Constraints**
All talkgroup names programmed in the system must be unique, and there can be no duplicates. Depending on the radio type and/or model the talkgroup field holds from 8 to 12 characters. This number is further limited by the need to identify the different zones assigned to an agency. Because of this need it is recommended that the first 1 or 2 characters be used to identify the particular zone, if feasible.

The 'A Zone' and 'Z Zones' are reserved as a system-wide zone and therefore the individual capital letters 'A' and 'Z' can not be used by any agency as a designator.

3. Operational Context:
This zone acronym reasonably identifies the primary talkgroup user when ever possible, with multiple zones using sequential numbering. For example: "P101 WSTD" would represent Police, Zone 1, Position 1, West Dispatch, while "PW1 PWAD" represents Public Works Zone, Position 1, Administrative talkgroup. In some cases a longer acronym may be required to identify agencies with similar names or initials, which is acceptable as long as the same scheme is used across the system.

4. Recommended Protocol/ Standard:
The zone aliases are prefixed with an agency identification that is unique to the agency (P=Police, PW=Public Works, SCH=Schools etc…).

The naming standard governs characters 1-3 for most agencies. Characters following the zone acronym are at the individual agency's discretion

A master table of zone aliases maintained by MRC is located in Appendix 3. As alias names are created/changed they shall be placed on the master list and be available to all appropriate parties for operations and planning.

5. Recommended Procedure:
N/A

6. Management
MRC is responsible for seeing that the defined standard is followed and maintained.

800 MHz Radio Systems
Standard Operating Procedures

Document Section:	**2. Configuration and Allocation**	Tech Committee Review
Sub-Section:	**2.1c**	Date: 07/10/2009
Procedure Title:	**Talkgroup Names**	
Date Established:	07/19/2007	MRAM Approval - Signature:
		Nancy Whiteman
Date Revised:	03/08/2012	Date: 7/19/2012

1. Purpose or Objective

The purpose of this section is to set forth the principle by which all radio users in the radio system establish names for talkgroups in order to ensure that there are no duplicate names, and also to facilitate intuitive understanding of the talkgroup name.

2. Technical Background:
▪ **Constraints**

All talkgroup names programmed in the system are unique, there can be no duplicates. Depending on the radio type and/or model the talkgroup field holds from 8 to 12 characters. Because of this difference it is required that 8 characters be used to program talkgroup names. In some cases, however, it is allowable to have a "short" version of the longer name to be programmed into the radio itself. For example: "PD-HERMITAGE" is system name, but "PD-HERM" is what is displayed in the radio

3. Operational Context:

With the exception of the first two or three characters, users are technically free to choose any unique name they wish for their talkgroups. However, since this is a shared system, talkgroups that are programmed into radios shall have naming conventions that will not conflict with other agencies. The naming standard is also essential because some talkgroups are shared by multiple agencies.

4. Recommended Protocol/ Standard:

The talkgroup alias is prefixed with an agency identification that shall be unique to that agency and readily identifies the agency the talkgroup is associated with. The agency ID's shall be the same as those identified on the "Radio Users Naming Prefixes" chart in this document, Appendix 4. The talkgroup name should then follow a number that designates the position of that talkgroup in the zone that also corresponds to the position of the selector knob on the subscriber radio.

Talkgroups that are not owned by an individual agency shall not have an agency specific identifying prefix. Examples of these are non-agency owned mutual aid talkgroups, or interoperable talkgroups such as those found in the 'A Zone'.

Talkgroups shall have the same name (alias) in all radios and consoles when possible. This is not always possible; however, due to radio programming limitations, some models of radios are not capable of more than 8 characters. These radios require condensing the talkgroup name to fit within the radio programming capabilities.

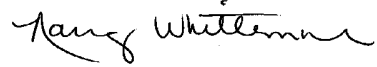This standard allows radio users, dispatchers & MRC staff to readily identify talkgroup ownership.

5. Recommended Procedure: N/A

6. Management

MRC is responsible to ensure that the defined standard is followed and maintained.

800 MHz Radio Systems
Standard Operating Procedures

Document Section:	**2. Configuration and Allocation**	Tech Committee Review
Sub-Section:	**2.2a**	Date: 03/08/2012
Procedure Title:	**Talkgroup ID Allocation**	
Date Established:	07/19/2007	MRAM Approval - Signature:
		Nancy Whitteman
Date Revised:	**03/08/2012**	Date: 7/19/2012

1. Purpose or Objective
The purpose of allocating talkgroup ID ranges for individual agencies allows agencies and MRC to manage the pool of IDs as talkgroups are configured. This simplifies the management of the IDs and provides an easier indication of agency IDs.

2. Technical Background:
System A talkgroups shall be in the range of 3000001 to 3065534.

B System talkgroups shall be in the range of 800001 to 865,534.

3. Operational Context:
The Metro 800 MHz System starts at the beginning of the talkgroup range with 3000001 or 800001.

4. Recommended Protocol/ Standard:
For programming radio users and talkgroups, individual agencies can only use the IDs assigned to them by MRC.
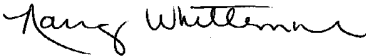
5. Recommended Procedure:
Agencies needing an additional allocation shall make a written request to MRAM for review prior to new assignments being given.

6. Management
MRC individually manages the ID ranges for day to day activities, and for reserve allocation.

800 MHz Radio Systems
Standard Operating Procedures

Document Section: Sub-Section: Procedure Title: Date Established:	**2. Configuration and Allocation** **2.2b** **Radio ID Allocation** 07/19/2007	Tech Committee Review Date: 03/08/2012 MRAM Approval - Signature:
Date Revised:	**03/08/2012**	Date: 7/19/2012

1. Purpose or Objective
The purpose of allocating radio ID ranges for the individual agencies allows the individual agencies and MRC to manage the pool of IDs as radio users, and console positions are configured. This simplifies the management of the IDs and provides an easier indication of what IDs belong to which agency in the event that a radio user alias is not available.

2. Technical Background:
System A radio IDs must be in the range of 00001 to 65534.

System B radio IDs must be in the range of 700001 to 765000

These IDs are the same IDs that users type in for private calls or call alert pages. Also, the IDs picked at this step are the same IDs that are displayed on the subscriber radios if the "ID Display" feature is enabled. These IDs are also displayed at the console if the console alias feature is not available.

3. Operational Context:
The Metro 800 MHz System starts at the beginning of the radio ID range with 00001, or 700001.

4. Recommended Protocol/ Standard:
For programming radio users and console positions, individual agencies can only use IDs reserved by MRC in the agency alias list.

5. Recommended Procedure:
There is a reserve pool of ID numbers for agencies that need an additional allocation. In this case the agency shall make a written request to MRAM for review & additional allocation.

6. Management
MRC individually manages the ID ranges for day to day activities, and manages the ID ranges for reserve allocation.

800 MHz Radio Systems
Standard Operating Procedures

Document Section:	**2. Configuration and Allocation**	Tech Committee Review
Sub-Section:	**2.3a**	Date: 03/08/2012
Procedure Title:	**Fleetmap Standards**	
Date Established:	07/19/2007	MRAM Approval - Signature:
		[signature]
Date Revised:	**03/08/2012**	Date: 7/19/2012

1. Purpose or Objective

The 800 MHz systems contain a large number of talkgroups to support the various agencies that subscribe to the system. For the effective management of the system this policy defines the process used to document the fleetmap information. This information is in a format that can be shared with all agencies. This also provides a resource for subscribing agencies to reference when planning interagency communications. System fleetmap configuration information is classified as confidential, and is not released to the public.

2. Technical Background:

▪ **Capabilities**

The fleetmap is parameter information programmed into the system infrastructure and into the subscriber radios to control how those radios perform on the 800 MHz system.

The fleetmap spreadsheet is a documented matrix of the talkgroups in the system and the departments or agencies that use and control user access to these talkgroups. The fleetmap contains the following information:

Talkgroup Name	= Name of the talkgroup as it is programmed into the system.
Talkgroup Alias	= Abbreviated naming of the talkgroup to fit within the 8 or 14 character radio display
Talkgroup ID	= Numerical designation of the talkgroup in decimal and/or hexadecimal.
Failsoft Channel	= The system channel designated for the talkgroup when in the Failsoft mode
Owner	= The primary user agency with access control of the talkgroup.
Priority	= Priority level of the talkgroup.
On Console	= If the talkgroup is available as a console resource
Sharing	= The level of shared access as described in section 2.4, 'Shared Talkgroups'.
Emergency Backup	= A talkgroup on the system side opposite of the primary talkgroup to be used when the users primary system is unavailable

▪ **Constraints**

Access is tightly controlled, and is considered confidential

3. Operational Context:

MRC is responsible for managing the fleetmap information of the users. The ID information is kept secure as described in Section 7 of this manual.

4. Recommended Protocol/ Standard:

A detailed matrix is maintained on the system database. Each agency's radio representative maintains a fleetmap spreadsheet containing data on their talkgroups, and the users for whom they are responsible.

5. Recommended Procedure:

- If individual agency representatives desire to make updates and changes to their spreadsheets, the changes shall be coordinated with MRC. This allows MRC technicians to document any updates, coordinate those changes that affect other agencies and/or users, and maintain the databases for reference and interagency fleetmap planning.

- Talkgroups that are shared between subscribers of different agencies must be reflected on all the spreadsheets having subscribers using these talkgroups.

- MRC, at the direction of the talkgroup owner agency, may omit listing any information in the master fleetmap spreadsheets for encrypted talkgroups used for undercover operations and other highly sensitive activities. Unless specifically provided for elsewhere, all other system standards apply to the use of encrypted talkgroups.

- The disclosure of the fleetmap configuration information including talkgroup IDs, user IDs, user privileges and other related system information could substantially jeopardize the security of the system, and make it more susceptible to tampering, sabotage, unauthorized use, jamming, hacking, unauthorized access to the contents of confidential voice and data communications. Therefore, the master fleetmap spreadsheets shall be classified as 'Restricted Information', and are not available to the general public except by formal written request to MRC.

6. Management

MRC manages the fleetmap and radio system programming for all agencies, and the details of the process for communicating the information.

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Standard Operating Procedures

Document Section:	**2. Configuration and Allocation**	Tech Committee Review
Sub-Section:	**2.3b**	Date: 03/08/2012
Procedure Title:	**Subscriber Template Standards**	
Date Established:	07/19/2007	MRAM Approval - Signature:
		Nancy Whitteman
Date Revised:	**03/08/2012**	Date: 7/19/2012

1. Purpose or Objective

The 800 MHz systems contain a large number of talkgroups to support the various agencies that subscribe to the system.

For the effective management of the system this policy defines the process that is used to document the radio subscriber template information. Subscriber template configuration information is classified as confidential, and is not released to the public.

2. Technical Background:

▪ **Capabilities**

The subscriber template is parameter information programmed into the individual subscriber radios to control how those radios perform on the 800 MHz system.

An agency's subscriber template spreadsheet is developed and maintained by MRC with the input of each agency's radio representative. This is to ensure the agency gets the talkgroups, features, and functionality desired from the radios, while maintaining the overall functionality and integrity of the radio system.

The radio subscriber template is usually specific to a particular agency, but an agency can elect to have different template versions depending on the department's needs and operations.

The templates normally contain the following information:

▪ Radio Configuration - Specific information related to a particular model of radio, including but not limited to; button assignment, display options, menu items, and other radio wide parameters

▪ Conventional - Personality information that determines the radios operation in the conventional mode such as frequencies, tones, and signaling options

▪ Trunking - Identifies systems and talkgroup specifics that the subscriber radio has access to, as well as system and unit specific ID numbers relating to the radios operation

▪ Scan - Defines the limits and lists of the subscriber radio's scan function, when equipped

▪ Zone Assignment - Where talkgroups are combined into specifically labeled 'zones' within the radio that represent or reflect operations of a particular agency, or operation. The zone designation reflects an acronym which should easily identify the zone as belonging to a particular agency, as reflected in Appendix 3, Radio Zone Aliases.

▪ **Constraints**

Access is tightly controlled, and is considered confidential

3. Operational Context:

MRC is responsible for managing the subscriber template information of the users. The ID information is kept secure as described in Section 7 of this manual.

4. Recommended Protocol/ Standard:

MRC and each agency's radio representatives maintain a subscriber template spreadsheet for each of the agency's template versions.

5. Recommended Procedure:

▪ If individual agency representatives desire to make updates and changes to their templates, the changes shall be coordinated with MRC. This allows MRC technicians to document any updates, coordinate those changes that affect other agencies and/or users, and maintain the database for reference and interagency fleetmap planning.

▪ MRC, at the direction of an agency using encryption, may omit listing any information in the master fleetmap spreadsheets for encrypted talkgroups used for undercover operations and other highly sensitive activities.

• The disclosure of the template configuration information including talkgroup IDs, user IDs, user privileges and other related system information could substantially jeopardize the security of the system, and make it more susceptible to tampering, sabotage, unauthorized use, jamming, hacking, unauthorized access to the contents of confidential voice and data communications. Therefore, the master fleetmap spreadsheets shall be classified as 'Restricted Information', and are not available to the general public except by formal written request to MRC.

7. Management

MRC manages the fleetmapping, subscriber templates, and radio system programming for all agencies, and the details of the process for communicating the information.

800 MHz Radio Systems
Standard Operating Procedures

Document Section:	**2. Configuration and Allocation**	Tech Committee Review
Sub-Section:	**2.4a**	Date: 05/10/2007
Procedure Title:	**Talkgroup Ownership**	
Date Established:	07/19/2007	MRAM Approval - Signature:
		Nancy Whitteman
Date Revised:		Date:07/19/2007

1. Purpose or Objective

Defines the ownership of private, shared, and interoperable talkgroups and resources, and provides a standard so that MRC shall have firm guidelines on allowing particular talkgroups programmed into radios.

2. Technical Background: N/A

3. Operational Context:

Talkgroups are considered 'owned' by the agency requesting the creation of the talkgroup. The process for pre-defined sharing authorizations is explained in Section 2.4b.

4. Recommended Protocol/ Standard:

There are three tiers of talkgroups that are programmed into the system:

Private:

Private talkgroups that are owned by the individual user agencies, used for normal day to day operations, and are not shared with any other agency.

Talkgroups prefixed with the owning agency's identification as defined in the talkgroup naming standards of the system standards manual.

Private talkgroups are either "Listed" or "Unlisted". Only those private talkgroups used for undercover operations or other highly sensitive confidential law enforcement activities shall be "Unlisted".

Shared:

Private talkgroups are owned by the individual user agencies, and shared with other agencies by mutual agreement. These are generally used for routine or pre-planned activities between the sharing agencies.

Talkgroups prefixed with the owning agency's identification as defined in the talkgroup naming standards of the system standards manual.

Private and shared talkgroups are "owned" by a particular agency or group of agencies and the talkgroup shall not be programmed into other agency's radios unless specifically authorized by the "owner". MRC shall not allow a talkgroup to be programmed into a radio without such authorization.

Before a talkgroup can be shared, the owning agency must "pre-authorize" the sharing arrangement and/or provide a letter of authorization.

Interoperable:

Interoperable (i.e. Mutual Aid) talkgroups are intended for interagency communications and assistance and fall into two categories: 1) those used for 800 MHz communication only, and 2) those that are patched to conventional RF resources.

Interoperable talkgroups shall not be owned by any specific agency, and shall not require agency letters of authorization. The authorizations are defined in Section 3 of this manual. This provides standing written documentation so that MRC has firm guidelines on allowing particular talkgroups in radios.

Because these are non-owned talkgroups, talkgroup names shall not be prefixed with agency identification.

5. Recommended Procedure:

The procedure regarding pre-authorizing talkgroup sharing is defined in Section 2.4b of this manual.

6. Management

MRC is responsible to see that this policy is implemented as defined in this system standards manual. Identified issues and concerns shall be sent to the technical committee for resolution.

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Standard Operating Procedures

Document Section: Sub-Section: Procedure Title:	**2. Configuration and Allocation** **2.4b** **Talkgroup Sharing**	Tech Committee Review Date: 03/08/2012
Date Established:	07/19/2007	MRAM Approval - Signature:
Date Revised:	**03/08/2012**	Date: 7/19/2012

1. Purpose or Objective

This standard defines how talkgroup owners permit access to outside users when requested, and if desired, and provides an option to the users of the 800MHz system that allows discretion to the talkgroup owners to predefine sharing authorizations for other agencies.

2. Technical Background:

- **Constraints:** Radios must be compatible with the signaling format of the system. Radios that are not P25 capable will be unable to access talkgroups on System A.

3. Operational Context:

Talkgroups are considered 'owned' by the agency requesting the creation of the talkgroup. As the owner of the talkgroup the agency has the authority and control to define who is allowed access to the talkgroup and to what degree. All talkgroups are considered as private unless specifically identified in writing to MRC as a shared resource, and with whom it can be shared. This process is accomplished with a formal written request to MRAM from the requesting agency, which is passed to the talkgroup owner for approval.

The suggested method to simplify this process is for the owning agency to predefine a shared radio zone with all of the talkgroups allowed assigned therein.

Predefined zones are kept in the talkgroup spreadsheets maintained by MRC. These spreadsheets are a reference available for the users of the system for talkgroup planning. If an agency does not pre-define a shared zone or talkgroup, then specific authorization for a particular talkgroup must be obtained from the talkgroup owner.

4. Recommended Protocol/ Standard:

The following letter designators are used to define the intended pre-authorizations in the master fleetmap:

> A – All Access: No restrictions, no letter of authorization required, any user may access
> C – Controlled Access: Permission is required to gain authorization for use; A letter of permission must   be generated and on file with MRC for each agency, entity, or individual user's authorization.
> I – Interoperability: Access allowed for purposes of interoperable communications; these talkgroups   are often found in pre-authorized zones and are shared with like agencies (law, fire, med, etc…).
> P – Private, No Access: This talkgroup is not allowed outside of owner agency units, and requests are   not considered.

If a talkgroup has not been assigned a level of pre-authorization, by default, it is considered private.
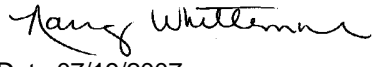
5. Recommended Procedure:

MRC, working with the talkgroup owners, performs the task of assigning talkgroup sharing designations in the master fleetmap and ensuring those levels of access are reflected in the appropriate subscriber templates. If a talkgroup has not been assigned a level of pre-authorization, it is considered private.

6. Management
MRC is responsible for the management of this procedure.

800 MHz Radio Systems
Standard Operating Procedures

Document Section: Sub-Section: Procedure Title:	**2. Configuration and Allocation** **2.5** **Talkgroup and Radio User Priorities**	Tech Committee Review Date: 05/10/2007
Date Established:	07/19/2007	MRAM Approval - Signature: *Nancy Whitteman*
Date Revised:		Date:07/19/2007

1. Purpose or Objective

The purpose of establishing varying priority levels for talkgroups is to assure the most critical talkgroups on the system are granted a channel as quickly as possible where the system is experiencing busy conditions.

2. Technical Background:

▪ **Capabilities**

The system priorities can be managed at the radio user level and at the talkgroup level.

▪ **Constraints**

All radio user priorities are set to 10, as radio users change talkgroups, the effective priority is set by the assigned talkgroup.

3. Operational Context:

Priority levels in the system are managed at the talkgroup level. The goal is to distribute priorities across the systems talkgroups in a way that maximizes the ability for critical groups to communicate and minimizes the number of talkgroups with high priority. All user priorities are set to the lowest priority level, 10. As radio users change talkgroups, the effective priority is set by the assigned talkgroup.

4. Recommended Protocol/ Standard:

MRC assigns talkgroup priority levels not exceeding the level defined by the criteria below. Talkgroup priorities that are assigned to level five or above are subject to the review and audit provisions that are specified in the Management Section 1.7 of these system standards.

> **Priority 1:**
> **[Definition: EMERGENCY]:** Only Emergency Alert calls, i.e. emergency or 'Code 5000' button pressed, are given the Priority 1 status automatically by the system's controllers.

> **Priority 2:**
> **[Definition: EXTRAORDINARY/TEMPORARY]:** Is used for temporary re-prioritization (via system manager terminal) of a lower priority talkgroup for critical operations, i.e. presidential motorcade, major incident command, etc. In addition Priority 2 is assigned to dedicated "EMERGENCY ALARM" talkgroups for agencies such as Transit that do not use the Emergency Alert (emergency button) function.

> **Priority 3:**
> **[Definition: Shared Talkgroups normally dealing with MUTUAL AID]:** system-wide mutual aid interoperability talkgroups.

> **Priority 4:**
> **[UNASSIGNED]:**

Priority 5:
[Definition: Talkgroups dealing with the Safety and Protection of Life and Property]: Is used for talkgroups that have an impact on the delivery of services that involve the safety and the protection of life and property. Priority 5 talkgroups may also include those talkgroups used by personnel involved in high risk and mission critical field operations.

Priority 6:
UNASSIGNED]:

Priority 7:
[NON-MISSION CRITICAL]: Is for all other "secondary", "administrative", "non-essential" or "non-mission critical" talkgroups used by subscriber agencies, both public safety and general government. (See Glossary - Definitions and Acronyms for explanation of "Mission Critical" and related terms.)

Priority 8
[Outside Agency]: Is used by outside agencies talkgroups, where the agency is not a Metro or NES entity and has requested a dedicated talkgroup for their own use, as defined in Section 1.9a.

Priority 9:
[UNASSIGNED]:

Priority 10:
[PRIVATE CALLS]:
Is used for private calls as defined by direct point to point radio to radio communications that are not carried out within a talkgroup. This priority will also be used for talkgroups that are established for system testing.

5. Recommended Procedure:
N/A

6. Management
MRC is responsible for supervision and management of this procedure.

800 MHz Radio Systems
Standard Operating Procedures

Document Section:	**2. Configuration and Allocation**	Tech Committee Review
Sub-Section:	**2.6**	Date: 07/10/2009
Procedure Title:	**Telephone Interconnect**	
Date Established:	07/19/2007	MRAM Approval - Signature:
		Nancy Whitteman
Date Revised:	03/08/2012	Date: 7/19/2012

The Telephone Interconnect feature has been removed from the system; hence this section is no longer applicable to system operations.

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Standard Operating Procedures

Document Section:	**2. Configuration and Allocation**	Tech Committee Review
Sub-Section:	**2.7**	Date: 03/08/2012
Procedure Title:	**Failsoft Assignments**	
Date Established:	07/19/2007	MRAM Approval - Signature:
		Nancy Whitteman
Date Revised:	**03/08/2012**	Date: 7/19/2012

1. Purpose or Objective
It is the policy of MRAM to create and assign system resources, in a manner which maximizes system utility to new and existing uses, consistent with each user's mission and needs for radio communications.

2. Technical Background:
▪ **Capabilities**
When the main controllers detect certain failure conditions in the radio system, all available channels revert from a trunking mode into a conventional repeater type of operation that is given the term 'failsoft'. During failsoft, talkgroups are assigned to a specific radio repeater if so programmed, which will allow the users to continue voice communication while repairs are made to the system.
▪ **Constraints**
There are a limited number of repeater channels available in a trunked system which causes a number of talkgroups to be combined on each channel while in failsoft. This requires the radio users to share those channels between numerous and often different disciplines and agencies. This congestion of radio traffic happens only during the failsoft condition.

If a talkgroup is not given a failsoft assignment, radios using that talkgroup will not receive any indication that the system is in the failsoft condition, and will result in loss of communications for any radio using that talkgroup without the operator's knowledge.

3. Operational Context:
The radio programming template failsoft assignments are configured to balance the ability for users to achieve an acceptable level of communications, while maintaining the individual department's privacy when possible. While in the failsoft condition, all radios will display the word 'FAILSOFT' on the radio display, and emit a short tone every 10-15 seconds to indicate to the user that normal trunked operation is unavailable.

4. Recommended Protocol/ Standard:
 Failsoft channel assignments are based on the needs of present users compared to new users, consistent with each user's mission and need for radio communications.

It is the policy of MRC to provide a failsoft assignment for every talkgroup n the system to prevent loss of communications for users. Under special circumstances this policy can be waived, but this requires a written request from the requesting agency, and careful coordination with MRC staff.

The technical committee makes determinations concerning Failsoft channel assignments.

5. Recommended Procedure:

6. Management
The technical committee is the responsible authority for failsoft issues.

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Standard Operating Procedures

Document Section: Sub-Section: Procedure Title: Date Established:	**2. Configuration and Allocation** **2.8** **Scanning** 07/19/2007	Tech Committee Review Date: 03/08/2012
		MRAM Approval - Signature: *Nancy Whitteman*
Date Revised:	**03/08/2012**	Date: 7/19/2012

1. Purpose or Objective
Identify operational procedures and responsible authorities governing scanning activities.

2. Technical Background:
▪ **Capabilities**
The network infrastructure and subscriber units are configured to permit managed user scanning of talkgroups. Whether scanning is utilized in subscriber radios is at the option of the user agency. Including a talkgroup in a non-priority scan list does not necessarily result in the user hearing traffic on that talkgroup. Talkgroups are only active if there is at least one user affiliated who has the talkgroup of interest as their selected channel.

▪ **Constraints**
An entire radio can be set up as receive only. However, transmit capable radios cannot have individual talkgroups set for receive only. Any talkgroup programmed into a normal user radio is technically capable of both transmit and receive operation, and any transmission can be displayed on a dispatch screen. Subscriber radios are unable to scan between the A and B systems and conventional channels due to the different signaling formats.

3. Operational Context:
An 'owned' talkgroup shall be pre-approved by the talkgroup owner for monitoring privileges by others as shown in the 'Shared' column of the master fleetmap.

4. Recommended Protocol/ Standard:
Before scanning and/or monitoring of owned talkgroups is allowed, permission shall be granted. Permission shall come from the jurisdiction/agency who is the "owner" of the requested talkgroup. Scanning shall also be approved by the radio user's agency or department radio representative in the template design before scanning will be available.

5. Recommended Procedure:
Permission
If the talkgroup does not appear in the master fleetmap as pre-approved for monitoring, then permission shall be obtained in writing from the talkgroup owner.
Scanning Configuration
It is recommended that individual user scanning be limited only to specific talkgroups owned by the user's parent agency, and only those others that require the user to respond in certain cases (i.e. a police officer monitoring fire dispatch for calls in his zone).

It shall also be noted that scanning is disabled when the user leaves the Metro system and switches the radio to a conventional (non-trunked) channel such as the A11 8CALL90 channel.

6. Management
MRC is the responsible authority for scanning issues.

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Standard Operating Procedures

Document Section: Sub-Section: Procedure Title: Date Established:	**2. Configuration and Allocation** **2.9** **Audio Logging Recorders** 07/19/2007	Tech Committee Review Date: 07/10/2009 MRAM Approval - Signature: *Nancy Whitteman*
Date Revised:	03/08/2012	Date: 7/19/2012

1. Purpose or Objective
Establishes the procedure for the use and accessing of audio logging devices.

2. Technical Background:
- **Capabilities**

A System Audio Logging Recorder allows all audio based radio traffic on the system to be recorded and stored for future reference.

Primary system audio is taken directly from the system and is stored on a hard-drive based recording system based at the ECC and Harding Dispatch Centers.

A talkgroup does not need to be active at a console position to be recorded.

- **Constraints**

DES Encrypted calls are recorded, however, the encryption key is not installed into the system and therefore those recordings are unusable and unrecoverable.

Audio Loggers do record private calls.

Other options for logging recorder audio sources are console logging audio outputs and individual control station based systems.
- Console logging audio outputs include transmit audio, and select and un-select receive audio. Console logging audio is only available for talkgroups that are active at the console work position. There is no way in which the separate audio for a specific talkgroup can be identified as belonging to that specific talkgroup. There can be received audio on multiple talkgroups on the un-select logging recorder audio channel. Frequently the audio from more than one talkgroup can be mixed together resulting in the inability to understand any one of the mixed audios being recorded simultaneously.

- A control station can be used as a source to receive the audio from a specific talkgroup. Multiple control stations, one for each specific talkgroup to be recorded, can be used at any one recording location. Control stations could also be used to record encrypted talkgroups if properly equipped and with the correct encryption key.

3. Operational Context:
The primary system audio logger is installed at the ECC. A secondary logger with limited capability is housed at the back-up dispatch center. Both logging systems are normally accessed and controlled by ECC staff

4. Recommended Protocol/ Standard:
An agency that needs to access the recording system, or requires a copy of any logged radio traffic should make their request to Metro's ECC quality assurance staff or Radio Communications. The

request should include specific information detailing the talkgroup, radio user(s), radio ID, time of day, and any other information that would help in processing the request.

Individual agencies are allowed to purchase, operate, and maintain their own secondary logging systems for their own use, but access for those systems is limited to talkgroups specific only to those agencies unless otherwise approved by MRAM.

5. Recommended Procedure:

- Requests for audio records should be directed to the ECC, which is the agency responsible for processing those requests.

6. Management

MRAM is responsible for this policy, while the ECC is responsible for the operation and data back-up of the logging system.

800 MHz Radio System
Standard Operating Procedures

Document Section:	**2. Configuration and Allocation**	Tech Committee Review
Sub-Section:	**2.10**	Date: 03/08/2012
Procedure Title:	**Private Call**	
Date Established:	07/19/2007	MRAM Approval - Signature:
		[signature]
Date Revised:	**03/08/2012**	Date: 7/19/2012

1. Purpose or Objective
To manage the use of private calls on the system. While this is a useful feature that is needed by some users, it shall be managed to an appropriate level to protect the primary radio communications purpose of the system.

2. Technical Background:
▪ **Capabilities**

Private calls can be placed between authorized individual users of the system. This communication is outside of normal talkgroup communications, and is essentially a private communication between to two radio users. Console operators can also place private calls to the radio users.

- ▪ **Constraints**
- ▪ The private call feature must be enabled in the users radio template and in the system controller in order for the feature to work
- ▪ A private call will consume a voice channel for the duration of the conversation
- ▪ Private calls are simplex; only one end can talk at a time.
- ▪ A low-tier radio cannot initiate a private call; it does not have the feature available.
- ▪ A mid-tier radio can only place private calls to numbers that are pre-programmed into the radio.
- ▪ A high-tier radio can place a private call by dialing the number directly via keypad entry.
- ▪ Private calls are recorded by the system.
- ▪ For the duration that a radio user is involved in a private call, the user will not be involved in dispatch or talkgroup communications.
- ▪ The system is not able to restrict the usage of private call on the system, unlike interconnect calls, which can be managed.

3. Operational Context:
The private call resource is to be used as a supervisory or system maintenance function. If there is a business need for a radio user to have this ability, it can be granted, but the resource must be closely managed to protect the RF resources of the system. This is also a capability of the dispatch consoles.

4. Recommended Protocol/ Standard:
Private call usage shall only be programmed for the users of the system that have a need for the function; the primary purpose of the system is for radio communications. The priority level for private calls is 10; this is defined under the priority section of this document.

5. Recommended Procedure:
MRC and the agency radio representatives shall work with the user groups to plan the appropriate private call programming requirements if any, for those users, in order to protect the resources of the system.

6. Management
MRC is responsible for following this procedure and monitoring the effect and usage of this resource. If negative impact or excessive usage is determined, private call permission can be reconsidered and possibly revoked.

800 MHz Radio Systems
Standard Operating Procedures

Document Section: Sub-Section: Procedure Title: Date Established:	**2. Configuration and Allocation** **2.11** **Status Message Transmission** 07/19/2007	Tech Committee Review Date: 03/08/2012
		MRAM Approval - Signature: *Nancy Whitteman*
Date Revised:	**03/08/2012**	Date: 7/19/2012

1. Purpose or Objective
To specify that status messaging is an available feature of the system.

2. Technical Background:
▪ **Capabilities**

The status message feature does not consume system resources, the information is sent in to the system by using the control channel instead of a voice channel.

There is not an appreciable limit to the number of sets of status sets that can be programmed into the system; this does not become a factor in planning the usage of the resource.

Mobile radios can have an option to the mobile control head installed, which allows for one-touch status messaging to the dispatcher console, and is usually interfaced with the CAD system.

▪ **Constraints**

The Radio Control Manager (RCM) application is connected to the CAD interface to receive status messages.

3. Operational Context:
This is an available feature of the system. MRC is responsible for configuring and managing this feature for the users of the system.

4. Recommended Protocol/ Standard: N/A

5. Recommended Procedure: N/A

6. Management
MRC is responsible for configuring and managing this resource for the users of the system.

800 MHz Radio Systems
Standard Operating Procedures

Document Section: Sub-Section: Procedure Title: Date Established:	**2. Configuration and Allocation** **2.12** **Emergency Button** 07/19/2007	Tech Committee Review Date: 03/08/2012
		MRAM Approval - Signature:
Date Revised:	**03/08/2012**	Date: 7/19/2012

1. Purpose or Objective

There is a large variety of users on the radio system with various emergency alarm/notification needs. The various ways the emergency alarm can be configured allows for flexibility of use, however, it is important to plan the use of the feature in such a way that when an emergency button is pushed, it is responded to quickly and appropriately.

MRC shall ensure that users are aware of the radio system's emergency signal capabilities, and provide users with a means to maximize their use of this benefit.

2. Technical Background:
- **Capabilities**

The emergency button feature, if programmed, shall allow a radio user to send an emergency notification by pressing a button on the radio. The notifications audibly and visually alert all dispatch console positions with the talkgroup in their active configuration. Subscriber radios having the talkgroup selected also receive the emergency notification once the 'emergency' radio is keyed, and display the radio ID (or alias depending on the model of radio) of the radio generating the emergency.

Emergency calls are also automatically assigned the highest priority available by the system controller, and are the first available from the queue if the system is in a busy situation.

- **Constraints**

Radio template designs must avoid any instance where an emergency is declared, but the user can not be identified, or the emergency is directed to the wrong dispatcher or agency.

3. Operational Context:

In all Metro/NES radio configurations, the emergency alarm feature is always programmed for the recessed orange button on the top of the portable radio, or the top left feature button on the mobile radio.

It should be noted here that the emergency button is also referred to as the 'Code 5000' button by some agencies.

An agency can use the emergency button, if they so elect, however the process to receive the emergency notification needs to be documented and contain resolution for the items listed below in item 4.

No user of the system is provided with emergency signaling capability, unless the user agency provides for 24-hour a day, seven day a week (full time) direct dispatch capability, or has a written agreement with a 24-hour dispatch owner such as OEM, to support this function. No dispatcher shall clear an emergency without ascertaining what action is necessary to handle said emergency; and

taking the appropriate action to do so. The Metro ECC and OEM shall further develop an approved procedure for responding to emergency calls and the proper handling of such calls.

4. Recommended Protocol/ Standard:

Use of the emergency button as an emergency signaling option shall be available to any agency on the radio system, subject to certain conditions and provisions.

1. Agencies are not allowed to use this capability of the radio system without prior training provided to all users that have the feature activated in their radio.
2. All agencies implementing the emergency button shall have a plan in place to respond to emergency button activation.
3. It is the individual agency's responsibility to determine how an emergency alarm is answered, and which talkgroup(s) are capable of responding to an emergency alarm, and to which talkgroup a specific alarm reverts to.
4. All emergency key response plans must include, at minimum:
    - A central radio monitoring point identifying which radio user pushed the key, the location and nature of the emergency, and the proper agency response.
    - A central monitoring point shall be available during any/all hours that personnel are using the radio system.
    - A policy shall be in place for use of the emergency button by radio users.
    - A response plan shall be in place to assist the radio user in need.
    - In the event the central radio monitoring point is not the same agency as the radio user, an agreement on policy, monitoring, use, and response, shall be in place among the agencies.
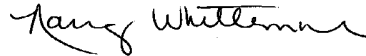
5. Recommended Procedure:

N/A

6. Management

Agencies that wish to use the emergency key function shall coordinate with agency resources that receive the emergency calls. The receiving agencies shall have an appropriate plan in place, and documented as to the process to handle the emergency calls.

800 MHz Radio Systems
Standard Operating Procedures

Document Section:	**3. Interoperability Standards**	Tech Committee Review
Sub-Section:	**3.1a**	Date: 07/10/2009
Procedure Title:	**The 'A Zone'**	
Date Established:	07/19/2007	MRAM Approval - Signature:
		Nancy Whiteman
Date Revised:	03/08/2012	Date: 7/19/2012

1. Purpose or Objective:

Establishes a dedicated, system-wide, common zone of interoperable talkgroups in all radios assigned to the 800 MHz system for interagency communications when coordination is required between any users on the system, but especially:

- Law enforcement, Fire Suppression, EMS, and OEM
- Metro public-safety agencies, State of Tennessee, and federal agencies
- Tennessee Homeland Security District 5 agencies and responders

2. Technical Background:

- **Capabilities**

The planners of the 800 MHz System recognized the need to make common interoperable talkgroups available to all subscribers, but primarily for use by law enforcement and EMS agencies for interagency and incident command communications. Therefore, in addition to an agency's normal talkgroups, the 'A Zone' is designed and designated to be programmed into all subscriber radios assigned to the system. Individual talkgroups in this zone reside on both the 'A & B' sides of the system to ensure that if one side of the system should fail, communications can continue on the remaining channels. All 'A Zone' talkgroups are designated as digital. Positions A11 through A15 contain the internationally recognized 800 MHz interoperable 8CALL90 & 8TAC91-94 channels. Position A16 is programmed with an on-scene, short range repeater frequency to be used when authorized by MRC or in direct mode for local, point-to-point, radio-to-radio communications within Davidson County only.

- **Constraints**

Use of the 'A Zone' is restricted to non-encrypted plain speech, with law enforcement and EMS personnel having usage priority. Access to talkgroups A1 through A5 is generally limited to incident command, branch level communication.

3. Operational Context:

The 'A Zone' talkgroups are used when there is a significant need for communications to coordinate activities between incident commanders of different agencies, and/or personnel assigned to work them, or for special events requiring communications among personnel from multiple agencies.

'A Zone' talkgroups can also be used for short-term high intensity events such as a law enforcement pursuit across county borders, and for long-term extraordinary events like a plane crash or storm disaster.

A patch between any 'A Zone" talkgroup and any channel or frequency outside of the 800 MHz system is used only if other suitable means for interagency communicating are unavailable, or if the other available means for coordination of communications are insufficient. Alternatives to an 'A Zone' patch may include:

- Use of a patch between the 8TAC91-94 channels and VTAC11-14 and/or UTAC41-43

- Radio to radio cross band repeaters between tactical channels at the scene via a gateway device (ACU-1000) at the scene or command site
- Radio console soft patching of a preauthorized VHF or UHF mutual aid or tactical channel to a preauthorized talkgroup on the 800 MHz radio system
- Use of the 'Let's Talk' system

4. Recommended Protocol/ Standard:

The following table shows the layout of the 'A Zone', the naming standard for all radios on the system. This zone is duplicated in ALL subscriber radios and consoles for system-wide interoperable communications.

Common Channels		
Unified Command	A1	Digital
Unified Command	A2	Digital
Unified Command	A3	Digital
Unified Command	A4	Digital
Unified Command	A5	Digital
Unified Command backup on B	A1PSE	Digital
Unified Command backup on B	A2PSE	Digital
Unified Command backup on B	A3PSE	Digital
Joint Operations	A6	Digital
Joint Operations	A7	Digital
Joint Operations	A8	Digital
Joint Operations	A9	Digital
All Metro Hailing	A10	Digital
Joint operations Back Up (System B)	A6OPSE	Digital
Joint operations Back Up (System B)	A7OPSE	Digital
Joint operations Back Up (System B)	A8OPSE	Digital

5. Recommended Procedure:
Normally, an event that requires interagency coordination begins on a main dispatch radio channel of one of the public safety agencies.
- When it becomes apparent that interagency coordination of law enforcement and/or EMS agencies is needed, a dispatch operator or supervisor shall advise the incident commander to switch talkgroups to the 'A Zone'.
- The specific radio channel to be used is specified by the responsible dispatch center operator, incident commander, Communications Unit Leader (COML), or their designee.
- If the 'A Zone' cannot be used for any reason, or if additional law enforcement interagency intercommunication is required, a console patch between the mutual aid channels and/or Interoperable frequencies and the 'A zone' talkgroups can be set up by the dispatch supervisor.

Dispatch center support and the decision to use the console patch is the responsibility of the dispatch center supervisor.
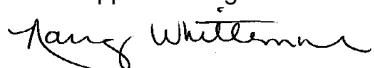
6. Management:

Responsibility for monitoring performance and for modifying this procedure is a function of the technical committee of MRAM.

The dispatch center supervisor is responsible to ensure that there is a procedure for use of a patch between the interoperability channels and the 800 talkgroups in the dispatch center.

Dispatch center operators shall receive initial and continuing training on this procedure and the use of this resource.

800 MHz Radio Systems
Standard Operating Procedures

Document Section:	3. Interoperability Standards	Tech Committee Review
Sub-Section:	3.1b	Date: 03/08/2012
Procedure Title:	**Use of 800 MHz patch to Statewide Fire Mutual Aid Channel**	
Date Established:	07/19/2007	MRAM Approval - Signature:
		Nancy Whitemore
Date Revised:	**03/08/2012**	Date: 7/19/2012

1. Purpose or Objective:

This establishes procedures for use of an audio gateway patch between the 800 MHz radio systems and the statewide fire mutual aid VHF frequency, in accordance with the Tactical Interoperable Communications Plan (TICP). The use of any mutual aid or interoperable radio resource requires that the procedures defined in the TICP be followed.

2. Technical Background:

▪ **Capabilities**

A non-repeated VHF fire mutual aid radio channel covering Tennessee is available for use by personnel of fire service agencies needing to coordinate with personnel of fire service entities from other jurisdictions. This radio frequency can quickly be patched to the 800 MHz trunked radio system through the dispatch console.

▪ **Constraints**

An 800 MHz talkgroup can only be in one patch. A conventional radio resource can only be in one patch.

A patch between an 800 MHz talkgroup and the fire mutual aid VHF frequency can result in radio coverage over an area greater than the service area of the 800 MHz radio system on the fire mutual aid VHF frequency. Therefore, whenever an 800 MHz talkgroup patched to the fire mutual aid VHF frequency is in use, no other practical use can be made of the fire mutual aid VHF frequency in a geographic area larger than the 800 MHz radio system service area.

When the fire mutual aid VHF frequency is patched to an 800 MHz talkgroup, and when an 800 MHz radio user transmits thereby keying up the fire mutual aid base station, the fire mutual aid frequency may not effectively be re-used elsewhere in the region. This is the same on a VHF radio to VHF radio basis for local area communications among personnel of agencies on VHF radio systems because of the interference potential from the fire mutual aid base station transmitter overriding the local users. This interference potential varies depending on the location of the fire mutual aid base station and the location of the other local area VHF only users.

3. Operational Context:

Patches between the fire mutual aid VHF frequency and the corresponding 800 MHz radio system talkgroups shall only be used when there is a significant need for communications between personnel on the VHF radio systems and users of the 800 MHz radio system. Use must always be in compliance with the rules governing fire mutual aid VHF frequency usage.

The fire mutual aid VHF frequency without a patch to an 800 MHz talkgroup is primarily used for interagency communications among fire personnel on VHF radio systems.

The fire mutual aid frequency and the associated patched 800 MHz talkgroup can be used for short-term high intensity events, and for long-term extraordinary events.

The fire mutual aid VHF frequency patched to the 800 MHz talkgroup shall be used only if other suitable means for interagency communicating are unavailable or if the other available means for coordination of communications are insufficient. Other means may include:
- Use of a patch between the VHF, UHF, and/or 800 MHz Interoperability channels
- Radio to radio cross band repeaters between tactical channels at the scene
- Radio console patching of a preauthorized agency VHF tactical channel to a preauthorized talkgroup on the 800 MHz radio system.

4. Recommended Protocol/ Standard:

It is recommended that an 8TAC91-94 channel normally be used for console patching to the mutual aid channel. No personnel in any dispatch center may patch the mutual aid VHF frequency to an 8TAC91-94 channel without authorization from the incident commander or dispatch supervisor.

5. Recommended Procedure:
Normally, an event that requires interagency coordination begins on a main dispatch radio channel of one of the public safety dispatch centers.

When it becomes apparent that interagency coordination of personnel from fire service agencies is needed, and coordinating participants are on VHF and 800 MHz systems, a console patch between the fire mutual aid VHF frequency and an 800 MHz 8TAC91-94 channel can be required.

Dispatch center operator support, and the decision to use the fire mutual aid VHF frequency patch to 8TAC91-94 channel, is the responsibility of the dispatch center supervisor in the center that started the event.
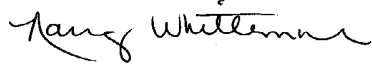
6. Management:
The use and management of the fire mutual aid VHF frequency continues to be the responsibility of the Tennessee Fire Chief's Association through the Fire Communications Advisory Board. This Board governs the use of that common channel. All users of the 800 MHz radio system patched to the fire mutual aid talkgroup shall comply with the fire mutual aid VHF operation rules.

Responsibility for monitoring performance and for modifying this procedure is a function of the Metro Fire Department and technical committee of MRAM.

The dispatch center manager is responsible for insuring that there is a procedure to patch between the fire mutual aid VHF frequency and the 8TAC91-94 channel in the dispatch center.

Dispatch center operators shall receive initial and continuing training on the use of this procedure.

800 MHz Radio Systems
Standard Operating Procedures

Document Section: Sub-Section: Procedure Title:	**3. Interoperability Standards** **3.1c** **Use of 800 MHz to Statewide Police** **VHF Mutual Aid Channel**	Tech Committee Review Date: 03/08/2012
Date Established:	07/19/2007	MRAM Approval - Signature:
Date Revised:	**03/08/2012**	Date: 7/19/2012

1. Purpose or Objective:

This establishes procedures for use of an audio gateway patch between the 800 MHz radio system and the statewide police mutual aid VHF frequency, in accordance with the Tactical Interoperable Communications Plan (TICP). The use of any mutual aid or interoperable radio resource requires that the procedures defined in the TICP be followed.

2. Technical Background:

▪ **Capabilities**

A large VHF radio repeater system covering much of the geographic area is available for use by law enforcement agencies using VHF radio systems that need interagency communications. This VHF interoperability radio frequency can be quickly patched to the 800 MHz radio system through the dispatch console.

▪ **Constraints**

An 800 MHz talkgroup can be in only one patch. Similarly, the law enforcement mutual aid frequency can only be in one patch.

A patch between an 800 MHz talkgroup and the law enforcement mutual aid VHF frequency can result in radio coverage over an area greater than the service area of the 800 MHz radio system on the mutual aid VHF frequency. Therefore, whenever an 800 MHz talkgroup is patched to the mutual aid VHF frequency is in use, no other practical use can be made of the mutual aid VHF frequency in a geographic area larger than the 800 MHz radio system service area.

When the mutual aid VHF frequency is patched to an 800 MHz talkgroup, and when an 800 MHz radio user transmits thereby keying up the mutual aid repeater station, the mutual aid frequency may not effectively be re-used elsewhere in the region. This is the same on a VHF radio to VHF radio basis for local area communications among personnel of agencies on VHF radio systems because of the interference potential from the mutual aid repeater station transmitter overriding the local users. This interference potential varies depending on the location of the law enforcement mutual aid repeater and the location of the other local area VHF only users.

3. Operational Context:

Patches between the law enforcement mutual aid VHF frequency and the corresponding 800 MHz radio system talkgroups shall only be used when there is a significant need for communications between personnel on VHF radio systems and users of the 800 MHz radio system. Use must always be in compliance with the rules governing the mutual aid VHF frequency.

The mutual aid VHF frequency, without a patch to an 800 MHz talkgroup, is primarily used for interagency communications among law enforcement personnel who are all on VHF radio systems.

The law enforcement mutual aid frequency and the associated patched 800 MHz talkgroup can be used for short-term high intensity events, and for long-term extraordinary events.

The mutual aid VHF frequency patched to the 800 MHz talkgroup shall be used only if other suitable means for interagency communicating are unavailable or if the other available means for coordination of communications are insufficient. Other means may include:

- Use of a patch between the VHF, UHF, and/or 800 MHz Tactical Interoperability channels
- Radio to radio cross band repeaters between tactical channels at the scene
- Radio console patching of a preauthorized agency VHF tactical channel to a preauthorized talkgroup on the 800 MHz radio system

4. Recommended Protocol/ Standard:

It is recommended that an 800 MHz 8TAC91-94 channel normally be used for console patching to the mutual aid channel. No personnel in any dispatch center may patch the mutual aid VHF frequency to an 8TAC91-94 channel without authorization from the incident commander or dispatch supervisor.

5. Recommended Procedure:
Normally, an event that requires interagency coordination begins on a main dispatch radio channel of one of the public safety dispatch centers.

When it becomes apparent that interagency coordination of personnel from fire service agencies are needed, and coordinating participants are on VHF and on the 800 MHz systems, a console patch between the police mutual aid VHF frequency and the 800 MHz 8TAC91-94 channel can be required.

Dispatch center operator support, and the decision to use the police mutual aid VHF frequency patch to the 8TAC91-94 channel, is the responsibility of the dispatch center supervisor in the center that started the event.
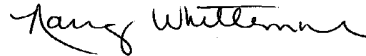
6. Management:
The use of and the management of the law enforcement mutual aid VHF frequency continues to be the responsibility of the Tennessee Police Chief's Association through the Police Communications Advisory Board. This Board governs the use of that common channel. All users of the 800 MHz radio system when patched to the law enforcement mutual aid talkgroup shall comply with the mutual aid VHF operation rules.

Responsibility for monitoring performance and for modifying this procedure is a function of the Metro Police Department and technical committee of MRAM.

The dispatch center manager is responsible for ensuring that there is a procedure to patch between the fire mutual aid VHF frequency and the 8TAC91-94 channel in the dispatch center.

Dispatch center operators shall receive initial and continuing training on the use of this procedure.

800 MHz Radio Systems
Standard Operating Procedures

Document Section:	**3. Interoperability Standards**	Tech Committee Review
Sub-Section:	**3.1d**	Date: 07/09/2009
Procedure Title:	**Use of the 'Lets Talk' System**	
Date Established:	07/16/2009	MRAM Approval - Signature:
		Nancy Whiteman
Date Revised:	**03/08/2012**	Date: 7/19/2012

1. Purpose or Objective:

This establishes policies for programming and the procedures for use of the newly established 'Lets Talk' System in Tennessee Homeland Security District 5 (HSD5). The use of any mutual aid or interoperable radio resource requires that the procedures defined in the TICP be followed.

2. Technical Background:

▪ **Capabilities**

A large linked radio repeater system covering much of the HSD5 geographic area is available for use by all public-safety agencies needing immediate interoperable interagency radio communications between the VHF, UHF, and 800MHz frequency bands.

This system maintains a permanent audio patch between the statewide mutual aid frequencies assigned to each of those frequency bands, is not dependent on any human intervention for its activation, and uses no Metro system resources.

The 'Lets Talk' system is operational in Davidson, Rutherford, Sumner, Williamson, and Wilson counties, and the coverage of this system is considerable.

▪ **Constraints**

This patch between mutual aid frequencies can result in radio coverage over an area greater than the service area of the 800 MHz radio system.

The system is based on analog audio signals, and is therefore subject to the same static and interference issues as the 8TAC90 and 8TACxx channels.

3. Operational Context:

This permanent patch between the VHF, UHF, and 800 MHz mutual aid channels shall only be used when there is an immediate and significant need for radio communications between personnel from different agencies using the separate radio frequency bands

The primary intended purpose of the 'Lets Talk' system is to provide a means of immediate interoperable radio communications between public-safety personnel that are actively engaged in, or are responding to an active police chase, fire, robbery, or other type of incident requiring timely aid or assistance from other cross-border agencies.

These public-safety mutual aid frequencies can also be used for short-term high intensity events, and for long-term extraordinary events.

4. Recommended Protocol/ Standard:

The 'Lets Talk' channel and/or talkgroup will be included in all public-safety agency templates. In order to make this valuable resource quick and easy to locate it is programmed into the agency's primary zone at the very last position. This also corresponds to selector knob position 16 in all radios so equipped, and should make changing to this channel easier to do when in pursuit or running hot.

5. Recommended Procedure:

Normally, an event that requires interagency coordination begins on a main dispatch radio channel of a public safety dispatch center.

When it becomes apparent that immediate interagency coordination of personnel from other county agencies is needed, and participants are on separate VHF, UHF and 800 MHz systems, use of 'Lets Talk' may be required. The decision to use the Lets Talk system should be coordinated between the requesting unit and dispatcher before switching channels.

When an officer, dispatcher, or other responder recognizes the need to utilize 'Lets Talk' to coordinate the actions of separate agencies during an incident, the dispatch supervisor should quickly notify the requested agencies of the activation of 'Lets Talk' and request those agencies responders to use 'Lets Talk' to communicate and coordinate actions with the Metro unit(s)
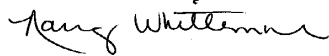
6. Management:

The use of and the management of the 'Lets Talk' system is the responsibility of the HSD5 Communications Committee and TEMA. This group attained the grant funding, and established the use of that system. All users of the system shall comply with the rules of mutual aid operations.

The dispatch center manager is responsible for ensuring that there is a procedure to notify requested agencies of Lets Talk activation.

Dispatch center operators shall receive initial and continuing training on the use of this procedure.

800 MHz Radio Systems
Standard Operating Procedures

Document Section:	**3. Interoperability Standards**	Tech Committee Review
Sub-Section:	**3.2a**	Date: 07/10/2009
Procedure Title:	**User Interoperability with Other 800 Systems/Users – 8CALL90, 8TAC91-94**	
Date Established:	07/19/2007	MRAM Approval - Signature:
		Nancy Whitemore
Date Revised:	03/08/2012	Date: 7/19/2012

1. Purpose or Objective
This defines procedures for the use of 800 MHz conventional interoperable radio channels for intercommunications between radio users on different 800 MHz radio systems.

2. Operational Background:
▪ **Capabilities**

There are five nationwide 800 MHz frequency pairs assigned by the FCC exclusively for interoperable communications between public-safety radio users on different 800 MHz systems. One pair is reserved by the FCC as a calling/hailing channel, while the other four are reserved for tactical communications, normally used during incident command situations. These channels follow a nationally recognized naming plan for interoperable radio channels, and are labeled 8CALL90 for the calling channel, and 8TAC91, 8TAC92, 8TAC93, and 8TAC94 for the tactical channels respectively. These frequencies use analog modulation in a 25 kHz bandwidth repeater mode, or direct radio-to-radio "talk around" mode for on-scene interoperability.

The Metro 800 MHz radio system has one repeater operating on each of the frequency pairs with those stations located at four tower sites in Davidson County for maximum coverage area. The 8CALL90 repeater and the 8TAC91 station are both located at the Metro ECC.

▪ **Constraints**

If any of these frequencies is selected in a mobile or portable radio in the radio system, the radio user loses the priority revert feature as part of the talkgroup scanning function.

These radio frequencies are in the NPSPAC band of 800 MHz frequencies and all mobile and portable radios shall be able to function in compliance with NPSPAC specifications to use these channels.

There is only one repeater for each of the frequency pairs in Davidson County, so when the decision to utilize one of these resources is made, the repeater located closest to the incident should be used.

3. Operational Context:
These 800 MHz interoperability frequencies can be used for day to day interagency coordination, for urgent or emergency mutual aid situations, and/ or for other purposes where coordination between radio users on separate 800 MHz radio systems must intercommunicate to perform assigned duties.

These channels shall not be used for regular communication between radio users with full access to the Metro radio system.

4. Recommended Protocol/ Standard:

8CALL90 Calling Channel & 8TAC91-94 Tactical Channels

- The 8CALL90 and 8TAC91-94 channels are programmed into positions A11 through A15 in the 'A Zone' of all subscriber radios on the 800 MHz system unless specified in writing by the agency head of that particular agency.
- Outside agencies using the 800 MHz radio system shall have the conventional 8CALL90 and 8TAC91-94 channels included in their fleet maps. These channels shall be used when traveling outside the coverage area of the 800 MHz radio system and are used to communicate with another 800 MHz system with base and/or mobile radios on those channels.
- The ECC will monitor the 8CALL90 channel at all times, and 8CALL90 should be monitored nationwide in any other public-safety dispatch center with 800 MHz capabilities.
- The 8CALL90 and 8TAC91-94 conventional mobile relay stations are recorded.
- Transportable mobile repeaters can be installed in mobile command posts or other areas as needed.
- The talk around 8TAC91-94 radio channels are also available for use with on scene cross band repeat or cross band patch operations such as VHF to 800 MHz or UHF to 800 MHz.

5. Recommended Procedure:

Normally, events that require interagency coordination begin on a dispatched radio channel of one of the public safety dispatch centers. The dispatch center operator that handles the event initially becomes the responsible dispatch operator and shall provide dispatch service to all personnel in all units participating in the event.

- If coordination is required with personnel in units of another 800 MHz radio system, the dispatch center shall assign an 8TAC91-94 channel and inform the affected units in their agency to switch to the assigned channel. The dispatch center that assigned the channel is responsible for all notifications that the 8TAC91-94 channel is being used, and when there is no further need the channel is released.
- When Metro personnel on the 800 MHz system respond to/with personnel using VHF or UHF radio equipment, either**:**
  1. The dispatch center shall patch a VHF/UHF mutual aid channel to the conventional 8TAC91-94 channel, or
  2. The dispatch center shall request that a patch be created at the scene or in another dispatch center with the capability to create the patch, and proceed as described above.
- If interagency coordination is required for a time period longer than a few hours, or if the area where interagency coordination is needed does not have adequate network coverage, a mobile communications unit with on-board repeaters shall be sent to the area of the event operations for better coordination of communications.
- If an 800 MHz radio user from outside of Metro Nashville comes into the area and needs assistance, the outside radio user can call for help on the 8CALL90 channel. The requested PSAP shall immediately respond to that call.
  - If the requested PSAP does not respond to the assistance call, any other dispatch center can respond to, and serve the caller.
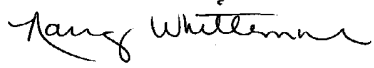
6. Management

Any public-safety 800 MHz radio system user may obtain a license for mobile and portable radio use of the 8CALL90 and 8TAC91-94 radio channels.

Dispatch center managers are responsible for preparing and conducting initial and continuing training for dispatch center operators on the procedures established for use of the 8CALL90 and 8TAC91-94 channels consistent with this procedure.

Responsibility for monitoring the use of and for recommending modifications to this procedure is a function of the MRAM.

800 MHz Radio Systems
Standard Operating Procedures

Document Section: Sub-Section: Procedure Title: Date Established: Date Revised:	**3. Interoperability Standards** **3.2b** **Use of the 'Shared' and 'OSRP' Channels** 07/19/2007 **03/08/2012**	Tech Committee Review Date: 03/08/2012 MRAM Approval - Signature: *Nancy Whittemore* Date: 7/19/2012

1. Purpose or Objective
Provide Standard Operating Procedures, and operating parameters for 'Shared' and 'On Site Repeater' (OSRP) channels.

Regional Objective
Create an operating procedure that maintains the safety of personnel in situations where they are out of range of the radio system. With the limited number of available 'Shared' and 'OSRP' channels, and the number of potential users, it is important that the use of mobile radios on these channels is limited. Once a radio is keyed, there is no way to control the footprint of the transmission other than limiting the power of that transmission. With two available 'Shared' channels, limiting the use of mobile radios addresses the emergency scene needs of the fire service and still meets the needs of greater range of mobiles for police, fire, and EMS personnel on the remaining 'Shared' channel.

2. Technical Background:
▪ **Capabilities**
Provides the ability to communicate from one subscriber to another when out of range of the radio system.

▪ **Constraints**
Portable units have limited range of operation depending upon the terrain and other conditions.

The high transmitter power of mobiles units when compared to the low powered portables creates the potential for a mobile radio to transmit over or 'drown out' a portable radio's transmission.

'Shared' channels included in a scan list of a radio unit prevent that unit from priority scan.

Dispatch centers are not able to monitor the 'Shared' or OSRP channels, or assign them for usage.

There are only two (2) 'Shared' channels and one (1) OSRP channel available.

The 'Shared' channels are only allowed in Metro's public safety mobiles and portables and mobile command posts. It is possible for mobile units to transmit over portable units without knowing it and endangering personnel operating on emergency scenes. The number of potential users in the Metro area can cause conflict during emergency operations.

'Shared' channels must be utilized only by authorized personnel for urgent or emergency situations, or other purposes where the system is not available, such as a convoy of vehicles out of the coverage area. It is not intended to be as a "chat channel", administrative channel, or any other non-emergency use.

Use of the 'Shared' channels is limited to within a 64Km radius of the ECC, and therefore should not be used outside of the immediate Davidson County area. Use of these channels outside of the

licensed area could result in harmful interference to other radio systems, and possible fines by the FCC.

3. Operational Context:

'Shared' channels shall be utilized only by authorized personnel assigned to 'Shared' channel for urgent or emergency situations, and/or for task teams or other purposes **where the system is not available.** 'Shared' channels are intended to be used by personnel who have lost contact with the radio system controller as a result of location (basement, subbasement, buildings or areas with poor or no coverage) or due to unavailability of the system.

4. Recommended Protocol/ Standard:

- The need or necessity for 'Shared' channels in each agency's radio is determined by that agency. If an agency opts to not place these in radios the agency is responsible for any limitations on the ability to communicate on the emergency scene.
- Encryption may not be used.
- Emergency operations require communications capabilities to maintain safety of personnel.

5. Recommended Procedure:

- Unit to unit communications is initiated when one or more units operating on scene are out of range of the radio system.
- 'Shared' channel locations are set by individual system users in the fleetmap.
- 'Shared' channels shall be utilized by on scene personnel at their discretion. The dispatch centers can not monitor the 'Shared' channels to assign usage. With 'Shared' channels available for each service, on scene units requiring the usage of a 'Shared' channel shall announce the intent to utilize the channel.

6. Management
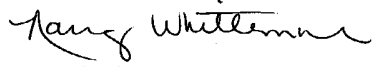
Elevated external antennas connected to portable radios and/or external power amplifiers must not be allowed on 'Shared' channels.

Individual agencies are responsible for ensuring that users and units utilizing 'Shared' channels follow the standards, protocol, and procedures.

Special Note on Training

- 'Shared' procedures shall be addressed in the training of all emergency personnel operating within the system. That training needs to cover the different on scene procedures utilized by police, fire, and EMS personnel. It is also crucial to system users that all emergency personnel are aware of the rules and procedures to utilize these channels. Improper usage or misuse can result in a scene safety issue for operating personnel.

800 MHz Radio Systems
Standard Operating Procedures

Document Section:	**3. Interoperability Standards**	Tech Committee Review
Sub-Section:	**3.3a**	Date: 03/08/2012
Procedure Title:	**Control Stations**	
Date Established:	07/19/2007	MRAM Approval - Signature:
		Nancy Whitteman
Date Revised:	**03/08/2012**	Date: 7/19/2012

1. Purpose or Objective:
Establish procedures for the use control stations for various purposes.

2. Operational Background:
▪ **Capabilities**
A control station is a radio that is set up with the same transmission and reception capabilities as a mobile or portable radio; however, it is installed at a fixed location and does not move.
▪ **Constraints**
A control station can function on only one radio system talkgroup at a time.

Care in design is exercised when multiple control stations are used at the same physical location to limit the amount of intermodulation interference generated.

Use of a control station with a gateway device to patch disparate radio systems, can have a region wide impact. This type of patch can be easily accomplished, but may cause harmful interference under certain circumstances.

3. Operational Context:
There are a number of uses for control stations including:
- An agency that does not have a dispatch console may use a control station to communicate with the network.
- Control stations can be used to gain access to the 800 MHz radio system from a dispatch center that is on a radio system other than the 800 MHz system.
- Control stations can be used for day-to-day purposes, for urgent or emergency situations, for task teams and for other purposes.

4. Recommended Protocol/ Standard:
- Use of control stations is recommended to gain access to the 800 MHz radio system by radio user agencies that are not on the system.
- Use of control stations for backup dispatching can be permitted, and is an optional use determined by each agency. Some agencies may elect to use portable radios in portable radio battery chargers for backup capability.
- Use of control stations by an agency without a dispatch center is permissible, and is an optional choice for radio user agencies served by the 800 MHz radio system.
- Use of control stations by agencies that have a dispatch center on the 800 MHz radio system at locations away from the dispatch center may be permitted, and is an optional selection available to each agency.
- A small number of control stations can be permitted at a single location provided that care in design is exercised to limit intermodulation products (see Section 1.7 for specific design requirements). Multiple control stations can be used for day-to-day communications, for urgent or emergency situations, for communications with task teams and for other purposes.

5. Recommended Procedure:

- Any agency wanting to use more than one control station at one location is only permitted to use that configuration if the design is compliant with Section 1.7.   The process for obtaining permission is to submit an application for multiple control stations to the technical committee. The application shall describe the location and use of each control station and make it clear that the multiple control station configuration design meets the criteria in Section 1.7.
- No special permission is required for an authorized user wanting to use a control station on the 800 MHz radio system, however, the control station must meet the standards for radio equipment operating on the 800 MHz radio system, as defined in Section 1.7a and 1.7b. In addition, the equipment must be registered on the system in accordance with Section 1.6c.
- The transmit and receive audio on control stations can be logged by the owner of the control station.

6. Management:

Each agency using control stations shall have written procedures, consistent with this procedure, clearly defining conditions under which the stations are used. All dispatch center operators shall be trained on the application of the procedures, and there shall be continuing training to maintain a good level of understanding of the procedures by all dispatch center operators.

800 MHz Radio Systems
Standard Operating Procedures

Document Section:	**3. Interoperability Standards**	Tech Committee Review
Sub-Section:	**3.3b**	Date: 03/08/2012
Procedure Title:	**Radio to Radio Cross Band Repeaters**	
Date Established:	07/19/2007	MRAM Approval - Signature:
		Nancy Whitlemmer
Date Revised:	**03/08/2012**	Date: 7/19/2012

1. Purpose or Objective:
Establish procedures for the use of temporary radio system to radio system repeaters and/or gateway devices for interagency intercommunications in a local area.

2. Operational Background:
▪ **Capabilities**
There are several gateway devices available that can interconnect to mobile and/or portable radios in any location. When such a device receives a transmission on one radio, it keys the transmitter on the other radio and feeds the audio from the receiving radio to the transmitting radio. The communications can actually go in either direction, but only one direction at one time. The radios can be any combination of VHF, UHF, and 800 MHz radios.
▪ **Constraints**
Care shall be taken in cross band repeating because all radio traffic on both communication channels appears on each of those communications channels and communications channel congestion can occur. In addition, care shall be taken in cross band repeating to avoid confusion when traffic from another radio system suddenly appears on a communications channel.

Care shall also be taken to assure that only one radio to radio cross band repeater is in use in a given area on at least one of the communications channels or a significant amount of collision interference will occur.

In any patching process, care shall be taken to avoid passing through the digital modulation process in radios more than one time to avoid severe degradation of audio quality.

3. Operational Context:
Radio to radio cross band repeaters shall be used for day-to-day activities, for urgent or emergency situations, for tactical teams and for other purposes.

4. Recommended Protocol/ Standard:
These radios shall not be used to interconnect traffic to an 800 MHz radio system talkgroup that is not authorized in accordance with the Shared Talkgroups Procedure #2.4.

Use of any gateway or cross-band device shall also comply with any and all of the Tactical Interoperability Communications Plans that pertain to the area(s) being covered.

Any agency using any radio system, conventional or trunked, can employ radio to radio cross band repeaters; however, use of these radio to radio cross band repeaters shall be restricted to local area operations only. The incident commander shall keep in mind that if one of the radios is on the input frequency of a repeated conventional channel, or on a talkgroup of an 800 MHz trunked radio system, there could be a significant impact on communications across a wide area.

The only channels that should be used in the radios for these gateways or cross band devices are preauthorized conventional radio channels, and 800 MHz talkgroups.

5. Recommended Procedure:

Radio to radio cross band repeater equipment can be carried and deployed in vehicles. The equipment shall only be used under direction of the incident commander and should only be used for communications in a local area for coordinating activities of personnel from different agencies involved in a single event.

The incident commander, COML, or their designee is responsible for ensuring that only authorized channels are used in a radio to radio cross band repeating configuration. Care shall be exercised in the selection of any 800 MHz radio system talkgroup selected for use in radio to radio cross band repeaters.
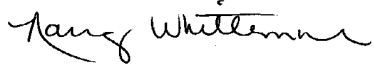
The incident commander, COML, or their designee is responsible to assure that two or more cross band repeaters do not include a single conventional channel or a single 800 MHz trunked talkgroup so that collision interference will not occur.

6. Management:

Any agency utilizing a gateway device or cross-band repeater is responsible for the training of personnel who operate those devices, and is required to obtain the necessary clearances for the radio channels and talkgroups that it intends to link. The manager of such an agency shall ensure that detailed procedures for the setup and use of the equipment are available to the operator.

No special licensing of gateway devices is required.

800 MHz Radio Systems
Standard Operating Procedures

Document Section: Sub-Section: Procedure Title:	**3. Interoperability Standards** **3.4** **Fall-back In-cabinet Repeat (FBICR) Policy**	Tech Committee Review Date: 03/08/2012
Date Established:	07/19/2007	MRAM Approval - Signature:
Date Revised:	**03/08/2012**	Date: 7/19/2012

1. Purpose or Objective:
This section provides a disaster recovery alternative means of communicating in the event that the master controller for either of the 800MHz Systems are lost.

2. Operational Background:
▪ **Capabilities**
An alternative exists to provide radio communications if all modes of the SmartZone simulcast system become inoperable. Special hardware connectors are pre-deployed at the tower sites, and are installed on pre-determined repeater stations at specific sites, converting them into stand–alone repeaters.
▪ **Constraints**
The implementation of a disaster recovery plan can greatly reduce the coverage that the simulcast system currently provides. One channel can only be activated at one site at a time in this configuration, so coverage will be limited to the specific site's radio footprint for that particular channel, and portable radio coverage could be reduced significantly. There will be a delay in implementing FBICR due to the time required for technicians to travel to/between sites.

3. Operational Context:
In the event of a disaster at a 'Prime Site', technicians will be dispatched to the remaining sites to activate pre-determined channels. MRC technicians will determine the exact sites and stations that require activation, with the failsoft channel assignments being considered.

4. Recommended Protocol/ Standard:
If the decision is made that the FBICR Plan must be implemented, MRC technicians will be dispatched to pre-selected sites, activating individual repeaters by the site and priority shown in Appendix 6.
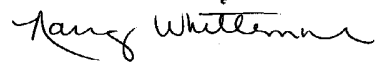
5. Recommended Procedure:
When MRC staff determines that a situation exists that inhibits normal or failure modes of system operation, technicians will be deployed immediately to activate the FBICR mode of operation, until which time the system has been repaired and can resume normal operations

6. Management:
MRC will manage this process.

800 MHz Radio Systems
Standard Operating Procedures

Document Section:	**4. Maintenance Practices**	Tech Committee Review
Sub-Section:	**4.1**	Date: 05/10/2007
Procedure Title:	**System Maintenance Responsibility**	
Date Established:	07/19/2007	MRAM Approval - Signature:
		Nancy Whittemore
Date Revised:		Date:07/19/2007

1. Purpose or Objective
To define the system maintenance responsibilities and roles. The maintenance levels for the 800MHz system and sub-systems shall be set to a standard to protect the overall functionality and integrity of the system for all users. A proper maintenance standard protects the warranties of the system and sub-systems.

2. Technical Background:
▪ **Capabilities**
Standards in maintenance protect the integrity of the system and protect the warranties of the sites and equipment. Coordinated maintenance is simplified by having one set of maintenance standards rather than multiple standards.
▪ **Constraints**
Improper maintenance poses a risk to the operational functionality of the 800 MHz radio system and sub-systems, and can risk equipment warranties.

3. Operational Context:
Each radio tower site and piece of equipment is considered "owned" by MRC, who is responsible for the maintenance of the sites and equipment. Agreements between MRC and maintenance contractors are at MRC's discretion, but MRC is ultimately responsible for the system.

Maintenance of the system and subsystems is separated into two categories, and three severity levels:

- **Categories:** Scheduled (Preventative) Maintenance, and Unscheduled (Corrective, Repair) Maintenance

- **Severity Level Matrix:**

Severity Levels and Descriptions	Problem Type and Descriptions
Severity Level - 1	**Catastrophic**
	Causes loss of functionality of any entire site.
	Simultaneous failure of 50% of the radio channels.
	Failure of all console positions at any communications center.
	Loss of the ability to report backbone alarms, or any alarms which might indicate a catastrophic failure.
	Loss of multi-site controls or networking.

	Loss of simulcast capabilities.
	Loss of Trunking capabilities.
	A non-catastrophic failure is not repaired within the response time specified herein for the operational system.
Severity Level - 2	**Non-Catastrophic**
	All Fixed equipment failures that are not categorized as Severity Level - 1 failures.
Severity Level - 3	**Preventative Maintenance Activities**

4. Recommended Protocol/ Standard:
N.A.

5. Recommended Procedure:
Any broad maintenance issues that affect multiple agencies shall be discussed and resolved at MRAM.

For day to day maintenance, MRC shall maintain the equipment.

For emergency and urgent repairs, MRC may request and expect cooperation from support resources (i.e. - support staff and/or parts) from the other agencies to restore equipment/systems to normal operation.

Repair of any equipment not normally maintained by MRC requires the notification and consent of the owning agency.

MRC and/or their contracted service providers are responsible for:
- FAA registrations and FCC licenses, ensuring that equipment is properly licensed and copies of the licenses are posted at the sites as required by regulations.
- Maintaining equipment within the limits of Metro's FCC licenses.
- Notifying the responsible personnel of equipment and location issues that require attention.
- Managing the inventory of the radio subscriber and infrastructure equipment.
- Ensuring that equipment at the tower sites that is not part of the radio system inventory shall be clearly labeled to indicate agency ownership.
- Routine equipment maintenance logs are kept at the sites.
- Maintaining current copies of all as-built documentation at each site and at the offices of MRC field services. MRC is responsible for ensuring the accuracy of all as-built data related to the infrastructure equipment and any changes or shall be immediately documented. MRC shall distribute the updated information as required.
- Coordinating, implementing and/or overseeing configuration changes affecting the system infrastructure.
- Any work being scheduled affecting the system and/or sub-systems performance and reasonable notification to the system's users of same.
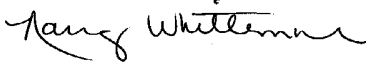
- Ensuring all technicians assigned to work on system equipment have successfully completed appropriate training on the equipment. Training requirements are referenced in the training section of the standards manual.
- Following a preventive maintenance plan as defined in the preventative maintenance section of the standards manual.
- Maintaining a list of the qualifications and contact information of technical staff in the event of emergency contact needs in LDRPS.
- Maintaining a list of the available spare parts/equipment pertaining to the system and sub-systems. All infrastructure spares, after returning from the repair center shall be re-installed into the same location they were removed from, and verified for correct operation prior to closing the repair case.
- Ensuring any equipment upgrades or changes affecting normal operations of the system are adequately discussed and approved by the technical committee.
- Determining how critical an equipment failure is operationally, determining the appropriate action, and escalating or de-escalating the repair process as needed.

6. Management

MRC is responsible for managing the maintenance of the radio system equipment and sites, and managing the repair responsibilities in emergency situations.

800 MHz Radio Systems
Standard Operating Procedures

Document Section: Sub-Section: Procedure Title:	**4. Maintenance Practices** **4.2** **Preventative Maintenance**	Tech Committee Review Date: 05/10/2007
Date Established:	07/19/2007	MRAM Approval - Signature: *Nancy Whitteman*
Date Revised:		Date:07/19/2007

1. Purpose or Objective

A failure of a portion of the system can impact users well beyond the failed portion of the system. For example, failure of a backup power system at a tower site during a shore power loss will have a serious impact on the rest of the system. The maintenance levels for the 800MHz system and subsystems shall be set to a required standard to protect the functionality of the overall system. A proper maintenance standard protects the warranties of the system and subsystems.

2. Technical Background:
▪ **Capabilities**

Standards in preventative maintenance protect the integrity of the system and protect the warranties of the sites and equipment. Coordinated preventative maintenance is simplified by having one set of preventative maintenance standards rather than multiple standards.
▪ **Constraints**

Improper preventative maintenance poses a risk to the operational functionality of the 800 MHz radio system and subsystems, can risk equipment warranties, and may lead to premature equipment failures.

3. Operational Context:

MRC is responsible for the maintenance of all sites and equipment. Agreements among MRC and maintenance contractors are at Metro's discretion, but MRC is ultimately responsible for maintenance of the system.

Maintenance logs shall be reviewed and archived by MRC staff. The maintenance logs are subject to review by the technical committee upon request.

4. Recommended Protocol/ Standard:
MRC is responsible for:
* Monitoring the performance of the system and subsystem equipment using the monitoring and reporting tools that are part of the system. If issues arise, it is MRC's responsibility to resolve the problem directly, or to bring the issue to the technical committee if broader resolution is needed.
* Ensuring that FCC and FAA rules and regulations are followed.
* Ensuring that the 'R56' site installation standards are maintained with all existing and future equipment.
* Appropriating spare modules, boards, field replaceable units (FRU) for the equipment is properly inventoried and maintained.
* Notifying system users when preventative maintenance may impact the system.
* Ensuring back-up power systems are properly maintained and always ready for service.
* Managing contracts for maintenance service and support.

MRC shall perform and document monthly inspections designed to test equipment redundancy and identify issues before problems arise. The testing shall include, but is not limited to the following:
* Power system testing and maintenance

- Shelter inspection
- Tower inspection
- Equipment inspection
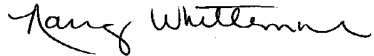
5. Recommended Procedure:
Preventative maintenance shall be performed as outlined in the schedule found in Appendix 8.

6. Management
MRC is responsible for managing the preventive maintenance for the equipment and sites.

800 MHz Radio Systems
Standard Operating Procedures

Document Section: Sub-Section: Procedure Title: Date Established:	**4. Maintenance Practices** **4.3** **Record Keeping Requirements** 07/19/2007	Tech Committee Review Date: 05/10/2007 MRAM Approval - Signature:
Date Revised:		Date:07/19/2007

1. Purpose or Objective
The purpose is to define the record keeping requirements of the 800 MHz System.

2. Technical Background:
▪ **Capabilities**
Proper record keeping facilitates the maintenance and support of the system.
  ▪ **Constraints**

3. Operational Context:
The following records are maintained by MRC, and are kept readily available for the support staff that is responsible for managing and maintaining the system:
- System Standards Manual
- System documentation and technical procedure manuals
- Current system and equipment as built documentation as defined in section 4.6 of this manual
- Equipment manuals
- Contact information as defined in section 4.4 of this manual.
- Spare equipment information as defined in section 4.5 of this manual
- Preventative maintenance logs as defined in section 4.2 of this manual
- System fleetmap and subscriber template configurations

The details for and of any documentation not specified in this manual, are at MRC's discretion.
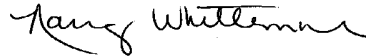
5. Recommended Procedure:
MRC staff shall compile system performance reports, and ensure that all documents and records are kept current. System data back-ups are archived, and stored at "on site" and "off site" locations.

6. Management
MRC is responsible for managing the record keeping.

800 MHz Radio Systems
Standard Operating Procedures

Document Section:	**4. Maintenance Practices**	TC Approval – Signature:
Sub-Section:	**4.4**	Date: 03/08/2012
Procedure Title:	**Contact Information**	
Date Established:	07/19/2007	MRAM Approval - Signature:
		Nancy Whiteman
Date Revised:	**03/08/2012**	Date: 7/19/2012

1. Purpose or Objective
To define the procedure and process for maintaining the internal and external staff contact information responsible for the support of the 800MHz System, and distribution of the contact information in a secure fashion.

2. Technical Background:
▪ **Capabilities**
Having the contact information readily available to the system support staff facilitates:
- General-purpose day to day communications
- Source information for distribution lists
- Notification for equipment / location issues
- Contacting support staff in the event of a system failure, after-hours service calls, or disaster recovery
- Having a clear list of vendor support contacts
- Facilitating the information electronically/centrally eliminates duplication of effort.

▪ **Constraints**
The contact information shall be kept up to date and available to the support staff of the 800 MHz system. This information is classified as 'Restricted Information".

3. Operational Context:
MRC maintains current contact information of support staff in the LDRPS system.

The contact information shall contain:
- Internal support staff, communications specialists, supervisors, technicians, etc.
- External support staff, subcontractors, equipment providers, etc.
- Building security contacts

MRC staff is responsible for the accuracy of the contact information. The contact information is kept within the LRDPS program maintained by Metro's Department of General Services, and LDRPS is available to appropriate staff.

4. Recommended Protocol/ Standard:
MRC shall utilize Metro's LDRPS resource to store emergency contacts and documents related to disaster planning and recovery. LDRPS is shared between all Metro agencies to store all pertinent contact and disaster recovery information.

5. Recommended Procedure:
MRC shall maintain all contact information of support staff in LDRPS. The resource shall be accessible to appropriate staff.
The contact information to be saved includes such things as:
- Agency
- Functional role
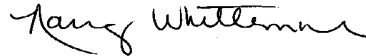
- Work address
- Contact phone numbers "work, home, pager, cell" at the support persons discretion.
- Email addresses

Any changes to contact information shall be updated through Metro's About ME.

6. Management

MRC is responsible for this process, through coordination with Metro's Department of General Services

800 MHz Radio Systems
Standard Operating Procedures

Document Section: Sub-Section: Procedure Title: Date Established:	**4. Maintenance Practices** **4.5** **Spare Parts and Equipment** 07/19/2007	Tech Committee Review Date: 05/10/2007 MRAM Approval - Signature: *Nancy Whitteman*
Date Revised:		Date:07/19/2007

1. Purpose or Objective
The purpose is to define policies and procedures for spare parts and equipment, including storage and financial responsibility.

2. Technical Background:
▪ **Capabilities**

A spare parts inventory facilitates quicker system recovery in the event of an equipment failure by having replacement parts readily on hand. Spare parts can also be used to assist the troubleshooting process of failed equipment and guarantees the appropriate field replaceable units are available in the event a replacement is needed.

▪ **Constraints**

The spare parts stocks shall be kept "pure". Intermittent or defective parts are not to be introduced into the spare parts stock.

3. Operational Context:
All spare parts and equipment are considered "owned" by MRC. It is MRC's financial responsibility for maintaining and storing the spare parts.

MRC maintains a centralized resource established for the tracking of spare parts and equipment; this resource also contains a log of equipment returned to the manufacturer/contractor for repair.

MRC is responsible for the functionality of the spare parts and equipment information sharing resource and for performing backups and archives of the spare information.

4. Recommended Protocol/ Standard:
MRC uses a central electronic resource for the tracking of spare equipment, the details of this process is at the discretion of MRC. MRC is responsible for providing of spare parts required to maintain the system or sub-systems.

5. Recommended Procedure:
MRC staff shall maintain an inventory of the spare parts, radios, and equipment available in a central information resource.
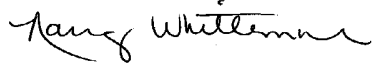
All work performed on the system is tracked by MRC with an internal work order process and external case number assignment from the system support center. Any non-consumable part or board that is used for repairs to the system is then tracked through the repair process by the assigned case and return authorization number assigned by the system support center.

When an item is returned from the repair facility, it is placed back in service in the device or unit from which it was removed, and is monitored for a reasonable amount of time to verify the repair. When the original item is verified working properly, the case that was opened with the repair facility shall be closed with the vendor. The spare part used during the repair is then returned to the spares inventory until required again.

6. Management
The MRC is responsible for this process.

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Document Section:	**4. Maintenance Practices**	Tech Committee Review
Sub-Section:	**4.6**	Date: 03/08/2012
Procedure Title:	**Equipment Configuration Information**	
Date Established:	07/19/2007	MRAM Approval - Signature:
		Nancy Whitteman
Date Revised:	**03/08/2012**	Date: 7/19/2012

1. Purpose or Objective

Outlines the purpose for the documentation of system, subsystem, and console equipment configurations.

All equipment configurations are classified as 'Restricted Information'.

2. Technical Background:

▪ **Capabilities**

Current configuration documentation of equipment hardware, firmware, circuit routes and software facilitates:

- Troubleshooting of system and subsystem equipment problems
- Reloading of configurations into equipment that has been replaced or lost its configuration
- Planning configuration upgrades and changes
- Maintaining a higher level of service for the users of the system

▪ **Constraints**

Equipment configuration information shall be made available to the support staff having a need for the information, and shall not be released to the general public.

3. Operational Context:

System and Subsystem:

Infrastructure as-built documentation is provided as part of the system documentation. It is MRC's responsibility to maintain the equipment configuration information and to keep the information current.

Current copies of as-built equipment configuration documentation are maintained at each site for the equipment located at the site, and at the offices of MRC.

MRC is responsible for maintaining the configuration information of the system and subsystem equipment, and for assuring the accuracy of all as-built data related to the infrastructure equipment. Any changes or alterations shall be documented immediately.

Console:

The field services staff is responsible for backing up the console configuration files located on the zone elite server. The backups shall be done on a regular basis. Supervisors can request additional back-ups if a large amount of changes have been made.

Portables and Mobiles:

MRC is responsibility to manage the mobile and portable radio fleet information, including such details as manufacturer, model, firmware, flash code, and template information.

4. Recommended Protocol/ Standard:

MRC maintains a central electronic storage resource for the system equipment configuration information, which is accessible by the technical staff.

5. Recommended Procedure:

The system manufacturer provides equipment configuration and as-built documentation as part of the system documentation.

MRC is responsible for managing the configuration information, including:
- Maintaining current soft copies of the information and protecting the data from loss
- Maintaining current hard copies of the configuration of the equipment at the equipment locations
- Updating the configuration information as changes are made within the system
- Resolving of configuration issues and errors

The disclosure of the equipment configuration information and other related system information could substantially jeopardize the security of the system; therefore, all system configuration information is classified as 'Restricted Information'.

6. Management

MRC is responsible for maintaining and keeping the equipment configuration information current.

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Standard Operating Procedures

Document Section:	**4. Maintenance Practices**	Tech Committee Review
Sub-Section:	**4.7**	Date: 03/08/2012
Procedure Title:	**Software Location**	
Date Established:	07/19/2007	MRAM Approval - Signature:
		Nancy Whittemore
Date Revised:	**03/08/2012**	Date: 7/19/2012

1. Purpose or Objective
To define the locations and responsibilities of the master and archived software copies and configuration backups for the 800 MHz Trunking System.

2. Technical Background:
▪ **Capabilities**
Having current software and data back-ups stored at multiple locations both on and off site protects against complete loss of data in the case of disaster. Multiple backups ensure that the required software is available when it is needed.
▪ **Constraints**
N/A.

3. Operational Context:
The following software shall have the master copies kept secure at the MRC office at the ECC, and archive copies kept at the MRC office at Metro Southeast:
- Backups of infrastructure and subscriber databases
- Infrastructure equipment software
- System server software
- System documentation
- Console software

The following software is kept secure at the MRC office at MSE, and on the Metro ITS server dedicated to MRC:
- Radio programming software and templates
- Subsystem equipment software

4. Recommended Protocol/ Standard:
This is an ongoing process, configuration backups are brought to the archive locations as made. Software changes shall be reflected in the source and archive locations.

5. Recommended Procedure:
As software changes occur, the master copy of the infrastructure and server software is kept at MRC at the ECC, archive copies are kept at MRC at Metro Southeast.

As infrastructure and subscriber changes occur, and backups are made, the current backups are kept at the MRC office at Metro Southeast.

6. Management
MRC is responsible for all software of the system infrastructure, servers, subsystem equipment, consoles, client workstations, and radio templates.

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Standard Operating Procedures

Document Section: Sub-Section: Procedure Title: Date Established: Date Revised:	**4. Maintenance Practices** **4.8** **Notification of Maintenance Activities** 07/19/2007	Tech Committee Review Date: 05/10/2007 MRAM Approval - Signature: Date:07/19/2007

1. Purpose or Objective

This section defines the procedure for notifications of scheduled and unanticipated maintenance activities having an impact on normal system operations.

It is the policy of MRAM to provide guidelines for radio user notifications by MRC for any maintenance actions having a potential for system interruptions.

2. Technical Background:

▪ **Capabilities**

Typically, equipment functionality can change when hardware and software configuration alterations, or other maintenance activities are performed. Notification of planned maintenance activities that impact the normal operation of the system allows user agencies and subscribers to make preparations as needed.

▪ **Constraints**

If the notification process is difficult and lengthy, it can become a barrier to performing scheduled maintenance activities, or can hinder an emergency repair of the system.

Unnecessary disruption in the operational use of the system due to a lack of notification creates unnecessary issues for resolution by MRAM.

Failure to make proper notification to user agencies can result in unneeded confusion, and loss of communications for radio users, and possible compromise of any special operations communications.

3. Operational Context:

Affected agencies shall be notified of maintenance activities that impact their subscribers of the system.

Agency notification of radio maintenance activities to their individual subscribers is at the discretion of their agency's designated representative.

4. Recommended Protocol/ Standard:

Maintenance activities, planned or unplanned, that could impact the subscribers usage of the system requires notification to the affected agency's radio representatives.

5. Recommended Procedure:

A reasonable advance notice shall precede preplanned maintenance activities that affect the agencies of the system. The notification methods shall be by phone, e-mail, radio, or any combination of the same. The notification will consist of:

- The type of planned maintenance activity
- When the maintenance will be conducted
- The amount of time anticipated to complete the activity

- The anticipated impact to the system and subsystems

If a known activity has a significant operational impact upon any specific agency, a confirmation of receipt of notification shall be obtained. It is the responsibility of MRC to ensure that all affected users are notified well in advance of any such operations.

Unanticipated maintenance or equipment failures affect the agencies on the system, and require notification to the affected agency's radio representative.

Whenever possible, these operations shall be scheduled for early morning hours when the normal radio traffic is slowest.

Prior to commencing the operation, personnel from MRC shall contact each dispatch center's supervisor, for a last minute situational briefing. At that time MRC personnel shall, as determined by the briefings, make the GO/NOGO decision.
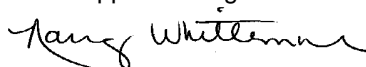
Once maintenance operations begin, if dispatch operations recognize a need to terminate the operation, or if unexpected problems occur, a supervisor must call the transmitter room at 862-8561 to inform the technicians of the situation.

Once the operations are complete, MRC personnel shall contact the dispatch supervisors for an update and user feedback.

6. Management
Each agency's radio representatives are responsible for notifications within their respective agencies.

800 MHz Radio Systems
Standard Operating Procedures

Document Section: Sub-Section: Procedure Title: Date Established:	**4. Maintenance Practices** **4.9** **Outage Responsibility / Time standards of repairs** 07/19/2007	Tech Committee Review Date: 05/10/2007 MRAM Approval - Signature:
Date Revised:		Date:07/19/2007

1. Purpose or Objective
To define the system outage responsibilities.

2. Technical Background:
▪ **Capabilities**
MRC technicians are responsible for assessing the outage situation and determining the best course of action for resolution.
▪ **Constraints**
There are too many unknowns to define an actual recovery time period for an outage.

3. Operational Context:
MRC is responsible for the system.

4. Recommended Protocol/ Standard:
This process is initiated when there is a notification of system impairment.

MRC is responsible for monitoring the system on a 24 hour basis, whether it is by on site personnel or by an automated electronic monitoring and notification process.

If the system impairment does not impact subscribing agencies on the system, the resolution process is at the discretion of MRC.

5. Recommended Procedure:
Upon notification of an equipment outage, MRC technical staff is expected to:
- Determine the impact of the impairment to the operation of the system. A minor failure is something that either does not affect, or minimally affects user functionality, a major alarm is something that seriously affects or risks user functionality of the system.
- Determine if there are internal or external factors that alter the priority of system impairment, such as weather, subscriber loading, unique public safety activities or impending events, etc.
- Determine if manual intervention is required, a serious failure requires initiating repair processes regardless of the time of day, and minor failures can wait until normal business hours before repair. The determination is at the discretion of MRC, and shall be based on internal system functionality and external subscriber needs.
- Determine if additional external resources are required.
- Notification process is used as defined in the "Notification" section 4.8 of this manual.
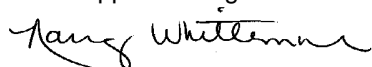
When requested by MRAM or the technical committee, the details of recovery processes may be reviewed for improvements.

6. Management
MRC Field Services is responsible for managing system and subsystem outages.

800 MHz Radio Systems
Standard Operating Procedures

Document Section: Sub-Section: Procedure Title:	**4. Maintenance Practices** **4.10** **EME (Electromagnetic Energy)** **Awareness**	Tech Committee Review Date: 05/10/2007
Date Established:	07/19/2007	MRAM Approval - Signature: *Nancy Whitteman*
Date Revised:		Date:07/19/2007

1. Purpose or Objective

It is the policy of MRAM to ensure all persons requiring entry to any transmitter sites are made aware of potential hazards including electromagnetic energy and radio-frequency emissions that may exceed applicable limits.

2. Technical Background:

▪ **Capabilities**

Personnel exposure to radio-frequency emissions is subject to federal guidelines as defined in OSHA regulations, and FCC publication "OET Bulletin 65, Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields".

▪ **Constraints**

Failure to educate and train technical staff in the proper safety techniques, or inform untrained workers or visitors of the hazards associated with radio-frequency emissions increases the potential for unnecessary exposure, personal injury, and possible litigation.

3. Operational Context:

MRC maintains a comprehensive safety program, and trains workers so that all personnel are aware of the potential exposure to those hazards, and have the necessary intellectual and physical tools to control or mitigate their exposure.
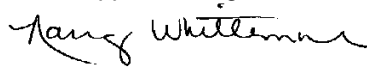
4. Recommended Protocol/ Standard:

1. Any person requiring access in close proximity to antennas, or to areas with high power radio transmitters under repair, is required to provide verification to MRC of awareness of the hazard potential, and understand how to control exposure.

2. Any personnel requiring access in close proximity to the antennas should employ lock-out/tag-out procedures to isolate the radio-frequency source prior to equipment servicing.

3. Any persons with implanted medical devices (including cardiac pacemakers) shall consult a physician before entering any areas with radio-frequency emissions.

5. Management

MRC is responsible for managing this policy.

800 MHz Radio Systems
Standard Operating Procedures

Document Section:	**4. Maintenance Practices**	Tech Committee Review
Sub-Section:	**4.11**	Date: 02/14/2013
Procedure Title:	**Lost and/or Stolen Radios**	
Date Established:	07/19/2007	MRAM Approval - Signature:
		Nancy Whitman
Date Revised:	**01/10/2013**	Date:03/21/2013

1. Purpose or Objective
It is the policy of MRAM to ensure the 800 MHz System's operational integrity and security by providing users with a procedure for responding to incidents of missing, lost or stolen radio units, and for the recovery of funds required to replace the radio equipment if obtained from MRC.

Each agency shall develop internal guidelines for dealing with incidents of lost, stolen or missing radio equipment.

2. Technical Background:
- **Capabilities**

  The radio system's controller provides individual access to the radio system for each assigned radio, and also the ability to regroup or lock a specific radio to a specific talkgroup, or to disable the radio altogether with the 'Inhibit" feature.
- **Constraints**

  The target radio must be turned on and affiliated with the radio system for the actions to be processed. If the target radio is not active, the requested action can be put into the passive mode, so when the target radio does attempt to affiliate with the radio system, the pending action is initiated.

3. Operational Context:
The individual radio user and/or agency must make immediate notification to MRC upon recognition or notification that an assigned radio is misplaced, lost, or stolen. Delay in providing notification could result in unauthorized persons causing interference and/or receiving confidential information.
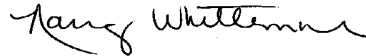
4. Recommended Protocol/ Standard:
MRC shall be immediately notified of the situation by one of the methods described in Appendix 7. The agency or user is required to obtain and submit a police report to MRC within 10 days of the reported loss.

If the radio equipment is owned by Metro and managed by MRC, the agency to which the lost or stolen radio is assigned shall be responsible for paying the replacement costs of that equipment.to MRC.

5. Management
MRC is responsible for managing this policy.

800 MHz Radio Systems
Standard Operating Procedures

Document Section:	**4. Maintenance Practices**	Tech Committee Review
Sub-Section:	**4.12**	Date: 03/08/2012
Procedure Title:	**Disaster Recovery**	
Date Established:	07/19/2007	MRAM Approval - Signature:
		Nancy Whiteman
Date Revised:	**03/08/2012**	Date: 7/19/2012

1. Purpose or Objective
It is the policy of MRAM to ensure that planning is in place and resources identified and available to expedite the recovery of the 800 MHz System and related components in the case of disaster or other major incident that affects operations of the system.

2. Technical Background: N/A

3. Operational Context:
MRC personnel with the assistance and guidance of Metro's Office of Business Continuity and Disaster Recovery maintains a comprehensive plan for restoration of Metro's radio communications systems during times of disaster.

4. Recommended Protocol/ Standard:
The plan is maintained in the 'Living Disaster Recovery Planning Software' (LDRPS) package that is utilized by Metro for disaster planning. This plan contains contact information for all MRC, vendor, and contracted support personnel, and basic recovery processes.

5. Management
Metro's Department of General Services maintains and manages the plan; MRC is responsible for updates.

800 MHz Radio Systems
Standard Operating Procedures

Document Section:	**5. Non-Governmental User Access**	Tech Committee Review
Sub-Section:	**5.1**	Date: 03/08/2012
Procedure Title:	**Media Access**	
Date Established:	07/19/2007	MRAM Approval - Signature:
		Nancy Whiteman
Date Revised:	**03/08/2012**	Date: 7/19/2012

1. Purpose or Objective

To establish a policy that allows news media to access certain voice communications over the 800MHz System if requested.

2. Technical Background:

▪ **Capabilities**

The 800MHz System became operational in 2000. The system provides enhanced communication and interoperability using state-of-the-art technology for public safety users such as police, fire, EMS, and public utility agencies.

▪ **Constraints**

At the time the 800MHz System became operational, conventional scanners were not compatible with the 800 MHz System. Some manufacturers have now developed scanners that are compatible with the system, and media organizations are encouraged to utilize them instead of two-way radios assigned to the system.

Under the provisions of section 2.4a, talkgroups are the property of the requesting agency and they shall control access to them. Talkgroups A1 -10 are used for interoperable communications among agencies, and are under the purview of MRAM. Radio templates are also the property of the requesting agency, who can choose to release all, part, or none of the template. MRAM controls access to templates used for any interoperability channels

Users of scanning radios and other scanning equipment shall comply with all federal and Tennessee statutes and rules regarding the use of scanning equipment.

At no time will access to encrypted communications be granted to personnel not directly authorized by the talkgroup owner.

3. Operational Context:

Members of the media who monitor public safety communications can monitor the communications of agencies who operate on the 800MHz trunked digital system using a radio programmed to scan selected talkgroups in a receive-only mode, however, access to encrypted communications and talk groups will not be granted.

4. Recommended Protocol/ Standard:

Media agencies monitoring the system shall purchase a radio that is compatible with the 800MHz system. The radio can only be programmed by staff authorized by MRAM. Before the radio is programmed the media agency must complete a signed agreement to abide by standards regarding use of the equipment, determined by MRAM, including that the radio can only be used for receiving communications and shall not be reprogrammed for transmit. Violation of the agreement shall result in the user's radio being inhibited immediately, and removed from the system.

5. Recommended Procedure:

Each agency using the 800 MHz system shall submit to MRAM a list of the talkgroups, if any, which are approved for media monitoring.

Media agencies wanting to operate a subscriber unit for purposes of monitoring communications on the 800MHz system shall complete an agreement with MRAM. The agreement includes terms and conditions for the use of radios on the system, requirement of compliance with state and federal law, and a list of the talkgroups monitored. These talkgroups shall be among those that the talkgroup owners have indicated may be monitored. The media agency can then purchase radios to be used for scanning purposes only. Violation of the agreement shall result in the media agency's radios being immediately inhibited and removed from the system.

In the event there is a dispute as to which talkgroups shall be made available, the agency owning the talkgroups maintains the final authority.
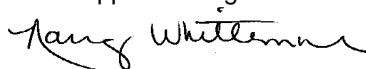
The purchase cost of radio equipment for monitoring is the responsibility of the media agency. There is no fee charged for media scanning access to the system, however, media users are responsible for the actual costs associated with programming the radio to operate on the system. The talkgroups programmed are limited to those specified in the user agreement.

Radios can only be programmed with talkgroups that are authorized or released for monitoring by the respective agencies owning those talkgroups. A talkgroup used solely for communications to the news media shall not be created.

6. Management

MRAM manages the media agreement process and maintains a list of users of radios for scanning purposes and talkgroups monitored.

800 MHz Radio Systems
Standard Operating Procedures

Document Section:	**6. Financial Policies and Fees**	Tech Committee Review
Sub-Section:	**6.1**	Date: 05/10/2007
Procedure Title:	**System Upgrades and Associated Costs**	
Date Established:	07/19/2007	MRAM Approval - Signature:
		Nancy Whitteman
Date Revised:		Date:07/19/2007

1. Purpose or Objective
The purpose of this standard is to set a procedure for determining the costs to be charged to Metro agencies and/or NES for changes or reconfiguration required to support additional capabilities on any part of the 800 MHz radio systems. Upgrades or changes to the system that benefit all users shall be reflected in the monthly billing, however, any changes requested that only benefit a specific agency shall require those costs be paid by the requesting agency.

2. Technical Background:
- **Capabilities**

To ensure compatibility with existing equipment and systems, the entity shall coordinate all requests through and with the assistance of MRC.
- **Constraints**

Failure to coordinate the request through MRC shall result in denial of the request

3. Operational Context:
MRC determines the annual capital, operating, and administrative costs of the system, which is taken into consideration when determining the annual rate structure.

The fee schedule is reviewed annually as part of the annual budget preparation process and is submitted to the Department for Finance for approval.

4. Recommended Protocol/ Standard:
MRC notifies agencies of the annual fee structure.
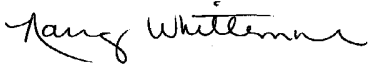
5. Recommended Procedure:
Any agency requesting specific changes or additions to the system shall consult with MRC to develop a technical design plan to present to MRAM. The technical committee shall review the plan and report back concerning any impacts on the system. If approved by MRAM, the plan shall be included in the capital budget request by MRC for administration approval and funding.

6. Management
This procedure is managed by MRC staff.

800 MHz Radio Systems
Standard Operating Procedures

Document Section:	6. Financial Policies and Fees	Tech Committee Review
Sub-Section:	6.2a	Date: 07/10/2009
Procedure Title:	User Fees for Administration	
Date Established:	07/19/2007	MRAM Approval - Signature:
		Nancy Whiteman
Date Revised:	07/10/2009	Date:07/16/2009

1. Purpose or Objective

The purpose of this standard is to outline a procedure for determining costs of operation, administration, and maintenance of the radio system and for billing each agency its prorated share. The standard is governed by Executive Order #29, which grants MRAM the power to assess user fees.

2. Technical Background: N/A

3. Operational Context:

Executive Order #29 provides for MRAM to assess each participating agency a user fee to cover the ongoing costs of administering, operating and maintaining the system. MRAM's responsibility as stated is to: "Determine the accurate maintenance and operating costs for the System and then recommend a plan to access each user a fair and proportionate share to recover these costs".

4. Recommended Protocol/ Standard:

MRC provides to all users an updated subscriber and access fee structure annually. The user fee structure is located in Appendix 5. MRC bills each agency on a monthly basis, based on the number of subscriber radios that agency has assigned on the system. For purposes of budgeting, each agency shall supply MRC with information concerning the entity's projected use of subscriber radios in the next fiscal year.

5. Recommended Procedure:
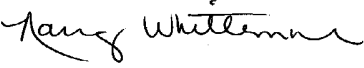
Each year, during the annual budget process, MRC staff prepares an estimate of the projected costs to be covered by user fees for the upcoming fiscal year. Administrative costs include salaries, benefits, office space, office supplies, postage, travel expenses, subscriptions, fees and dues; and services such as legal, financial, web site development and maintenance, insurance and intergovernmental relations.

Billing is prepared and submitted monthly.

6. Management

The Director of General Services is responsible for managing this procedure.

800 MHz Radio Systems
Standard Operating Procedures

Document Section: Sub-Section: Procedure Title: Date Established:	**6. Financial Policies and Fees** **6.2b** **Fees for Interoperability Participants** 07/19/2007	Tech Committee Review Date: 03/08/2012 MRAM Approval - Signature:
Date Revised:	**03/08/2012**	Date: 7/19/2012

1. Purpose or Objective
The purpose of this standard is to set a procedure for determining the costs to be charged to eligible agencies that apply for interoperability participation in the 800 MHz system.

4. Technical Background:
- **Capabilities**

The eligible agency shall acquire approved 800 MHz equipment capable of digital communication on assigned and licensed public safety land mobile channels.
- **Constraints**

All agencies shall comply with the interoperability plans and training requirements of MRAM, and include the 'A Zone' in the radio programming template. MRC has final approval of all radio equipment allowed to access the system.

5. Operational Context:
It is the policy of MRAM to strongly encourage all eligible agencies to participate in the 800 MHz system for the purpose of seamless and immediate interoperable communications in Davidson and surrounding counties, and Tennessee Homeland Security District 5. Therefore, it is the policy of MRAM to charge no fees for admittance to the system for the purposes of interoperable communications only.

4. Recommended Protocol/ Standard:
MRAM determines the amount of fees to be charged to agencies applying for dedicated talkgroups, however there are no fees charged for access to the 'A Zone', or talkgroup access granted by a user agency for interoperable communications.

5. Recommended Procedure:
During the application process for interoperability participation in the system, an eligible agency shall submit a formal written request to MRAM stating the specific talkgroups requested and justifications. The request shall be forwarded to the appropriate agency's radio representatives for consideration. After the request is reviewed, a formal vote from MRAM is required to grant or deny the request.

6. Management
This procedure is managed by MRC staff.

800 MHz Radio Systems
Standard Operating Procedures

Document Section:	**7. System Security**	Tech Committee Review
Sub-Section:	**7.1a**	Date: 07/10/2009
Procedure Title:	**Site and Equipment Security**	
Date Established:	07/19/2007	MRAM Approval - Signature:
		[signature] Nancy Whiteman
Date Revised:	03/08/2012	Date: 7/19/2012

1. Purpose or Objective
The purpose of this standard is to outline security measures and procedures in place to provide security and protect the integrity of the 800 MHz Radio System tower and equipment sites.

2. Technical Background:
▪ **Capabilities**
Security measures have the overall benefit of protecting the functionality, integrity and operation of the system.
▪ **Constraints**
Details of specific security measures cannot be placed within a public standard; otherwise measures used in monitoring and maintaining security are compromised.

3. Operational Context:
The physical security of equipment and structures making up the core of the radio system infrastructure is paramount to the reliability and availability of communications carried on the system. Each site is within a fenced, gated and locked compound, with shelter entry monitored and reported to a central monitoring point through the MOSCAD alarm and control system. A remote controlled camera system is installed at each site and is monitored by ECC and General Services Security personnel for any unauthorized entry or security concerns.

4. Recommended Protocol/ Standard:
Access to the sites is tightly controlled and entry to those sites is granted only to those personnel with proper authorization from MRC. All personnel requiring unaccompanied site access must have passed an FBI background check prior to that access. Personnel without proper background clearance must be accompanied by MRC staff. Entry alarms for the remote sites are sent immediately to the MRC technical support staff.
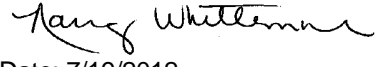
5. Recommended Procedure:
Notification of MRC staff and/or General Services Security personnel is required of all agencies and vendors prior to gaining site access. Any person requiring access to the tower sites for any reason shall have full clearance from MRC, or be accompanied and monitored by a MRC technician while there. Metro Police will be immediately notified and dispatched to any site with unexpected or unexplained alarms, or unidentified personnel viewed remotely from the camera systems.

6. Management
MRC is responsible for managing this procedure.

800 MHz Radio Systems
Standard Operating Procedures

Document Section:	**7. System Management**	Tech Committee Review
Sub-Section:	**7.1b**	Date: 03/08/2012
Procedure Title:	**Infrastructure Security, Equipment and Sites**	
Date Established:	07/19/2007	MRAM Approval - Signature:
		Nancy Whiteman
Date Revised:	**03/08/2012**	Date: 7/19/2012

1. Purpose or Objective
The purpose of this section is to define specific security measures for system and subsystem equipment and to define site security policy.

2. Technical Background:
▪ **Capabilities**
Security measures have the overall benefit of protecting the functionality, integrity and operation of the system.
▪ **Constraints**
Details of specific security measures cannot be placed within a public standard; otherwise measures used in monitoring and maintaining security are compromised.

3. Operational Context:
Equipment and site security is an ongoing process.

4. Recommended Protocol/ Standard:
All items identified as 'Restricted Information' will be maintained in secure areas within the control of MRC, and is not available outside of MRC or MRAM, except by formal written request.

Technical information that can compromise system security is considered 'Restricted Information'.

The system network is protected from other data networks by isolation, or by using a properly configured firewall having the approval of both MRC, Metro ITS, and the system manufacturer.

All remote access points to the system are kept secure, and are coordinated with MRC.

MRC password protects system and subsystem equipment for the purpose of preventing unauthorized access to equipment.

User login accounts are protected with passwords, providing an appropriate level of protection. If a password is suspected of being compromised, it is immediately updated.

External devices (computers, modems, routers etc) are not connected to the system network without the approval of MRC.

Site access is not unreasonably denied to outside agency support staff, but is closely monitored and can require escort by MRC staff. Outside agencies requiring site access are required to coordinate all site visits with MRC staff during normal working hours. After hours access is tightly controlled and is generally discouraged unless it is emergency situation. Access to any site without first contacting MRC is prohibited, and shall result in disciplinary action against the offending agency and can result in removal of the agency's equipment and total site restriction.

All personnel not previously authorized for access to equipment locations and tower sites will be under the supervision of authorized staff.

Any agency or vendor with access to any tower site or equipment location shall make immediate notification to MRC of urgent issues such as discharged employees or cancelled contracts.
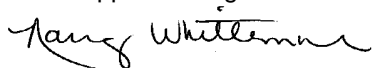
5. Recommended Procedure:
All agencies and personnel that require access to MRC controlled sites must provide signed copies of the MRC Radio Site Access Agreement for each person that will access the sites. The agreement is found in Appendix 9.

System documentation is classified 'Restricted Information'.

6. Management
MRC and NES are responsible for the equipment and site security for their respective portions of the system.

800 MHz Radio Systems
Standard Operating Procedures

Document Section:	**7. System Security**	Tech Committee Review
Sub-Section:	**7.1c**	Date: 03/08/2012
Procedure Title:	**Infrastructure Security, Tower Site Access**	
Date Established:	07/19/2007	MRAM Approval - Signature:
Date Revised:	**03/08/2012**	Date: 7/19/2012

1. Purpose or Objective
The purpose is to define specific security measures for the tower site access policy.

2. Technical Background:
▪ **Capabilities**
Security measures have the overall benefit of protecting the functionality, integrity and operation of the system.
▪ **Constraints**
In order to maintain the integrity of public safety communications MRAM does not allow use or access to the 800 MHz system structures or sites by commercial or private ventures of any kind.

MRAM must approve the use of, or access to the 800 MHz buildings and towers by any government agencies outside of Metro/NES, the only exception being per the terms of the lease between the State of Tennessee and Metro at the Pasquo and Cane Ridge tower sites.

Any internal agency of Metro/NES desiring access to the 800 MHz buildings or towers shall gain approval for access through the process outlined below.

Any internal agency requesting access to the 800 MHz buildings or towers are solely responsible for all costs related to the request, regardless to the outcome of the request.

At the discretion of MRAM, internal use charges shall be accessed and billed to the user.

3. Operational Context:
Equipment and site security is an ongoing process.

4. Recommended Protocol/ Standard: N/A

5. Recommended Procedure:
Step 1: Any agency desiring access to the 800 MHz buildings or towers shall make the request in writing to MRC.
All requests must include the following minimum information:
* Needs Justification
* Locations Desired
* Transmitter Frequencies
* Receiver Frequencies
* Transmitter Output Power
* Height and Orientation of Antennas
* Transmission line size
* Antenna Type and mounting details
* Antenna Wind Load Profile
* Equipment Size

- Equipment Power Requirements
- Equipment Heat / BTU information

All requests shall be in writing and addressed to:

Metro Radio Communications
P.O. Box 196300
Nashville, TN, 37219-6300

Step 2: MRC reviews the request, and if the request is deemed in the best interest of Metro/NES, MRC shall forward the request to MRAM for pre-qualification. MRAM can chose to take one of the following actions:
- Reject
- Pre-qualify
- Return to requester for further information.
- Refer to the technical committee for further review.

Step 3: Upon Pre-Qualification by MRAM the applicant shall submit the following documents to the technical committee for review and approval:
- Intermodulation study to the 9th harmonic
- Tower loading study stamped by a professional engineer
- Detailed design and installation plans
- Revised EME building studies
- Revised tower EME studies
- Revised power distribution drawings

Step 4: Based on the documents provided in step 3 the technical committee will make a recommendation to MRAM.

Step 5: MRAM approves or rejects the request.
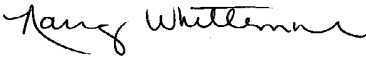
Conditions of Approval:
- All installations are in full accordance with current site installation and grounding standards and are subject to inspection by MRAM upon completion.
- Any non-compliant installation items identified during annual inspections shall be corrected immediately at the applicant's cost to include the cost of re-inspection if required.
- Upon notification from MRAM, any items not brought into compliance within 90 days shall be removed from the 800 MHz Trunked System structures at the applicants cost.
- MRAM reserves the right to withdraw approval at any time with or without cause.
- If approval is withdrawn, the applicant is responsible for removing all equipment at no cost to MRAM/Metro/NES

6. Management
MRC and NES are responsible for the equipment and site security for their respective portions of the system.

800 MHz Radio Systems
Standard Operating Procedures

Document Section: Sub-Section: Procedure Title:	**7. System Security** **7.2** **Software and Document Security**	Tech Committee Review Date: 05/10/2007
Date Established:	07/19/2007	MRAM Approval - Signature:
Date Revised:		Date:07/19/2007

1. Purpose or Objective

The purpose of this standard is to outline security measures and procedures in place to protect the integrity of the 800 MHz Radio System software and programming.

2. Technical Background:

The documentation, service and technical manuals, databases, spreadsheets and software of the 800MHz Radio System contain critical operational and technical information that could compromise the system if in the wrong hands, and is classified as 'Restricted Information' in accordance with Metros Information Classification Policy.

3. Operational Context:

The documentation and software of the system changes as the system evolves. Those changes and revisions must be documented and maintained in a central location for quick and easy access for the technical support crew.

4. Recommended Protocol/ Standard:

In the best interest of public safety, all documentation, service and technical manuals, databases, spreadsheets and software of the 800MHz Radio System are considered 'Restricted Information' in accordance with Metro's Information Classification Policy.

5. Recommended Procedure:

All items identified as 'Restricted Information' will be maintained in secure areas within the control of MRC, and only shared with those who require a knowledge of it for operational purposes, and is not available to anyone outside of MRC or MRAM, except by formal written request to MRAM, and is not to be released to internal agency personnel who do not have a legitimate and appropriate need.

6. Management

The Director of General Services is responsible for managing this procedure.

800 MHz Radio Systems
Standard Operating Procedures

APPENDIX 1 – Executive Orders

Document Section:	**Appendices**	Tech Committee Review
Sub-Section:	**Appendix 1**	Date: 07/10/2009
Procedure Title:	**Executive Orders**	
Date Established:	07/19/2007	MRAM Approval - Signature:
		Nancy Whittemore
Date Revised:	07/10/2009	Date:07/16/2009

1. Purpose
This appendix contains the three Executive Orders that set forth the responsibilities and process of the Metro Emergency Radio Management Committee (MRAM).

SECTION 1

EXECUTIVE ORDER NO. 99-06

SUBJECT: Creation of the Metro Emergency Radio Management Committee

WHEREAS, the Metropolitan Government and the Nashville Electric Service (N.E.S.) have embarked on a project to purchase, construct and operate a 800 MHZ trunked radio system (the "System") to improve emergency dispatch and response throughout Davidson County; and

WHEREAS, even though the digital radio technology that will eventually be used in the System provides greater efficiency in the use of radio bandwidth, the license issued to the Metropolitan Government by the Federal Communications Commission provides only a limited radio bandwidth to the Metropolitan Government; and

WHEREAS, in order to utilize the System to its fullest potential and preserve its availability for emergency use, the Metropolitan Government must efficiently manage and control access to the System; and

WHEREAS, in December 1997, the Metropolitan Government and Nashville Electric Service entered into a Memorandum of Understanding which included a provision for a joint committee to manage the access to and operation of the 800 MHZ trunked radio system; and

WHEREAS, the construction of the System is nearing completion, so it is time to establish an organized structure to manage the System.

NOW THEREFORE, I, Philip Bredesen, Mayor of The Metropolitan Government of Nashville and Davidson County, by virtue of the power and authority vested in me, do hereby direct and order the following.

1. That there be created and established the Metro Emergency Radio Management Committee.

2. The membership of the Metro Emergency Radio Management Committee shall be as follows:

(a) The Director of General Services, or his or her designee;

(b) A representative selected by N.E.S.;

(c) The Chief of Police, or his or her designee;

(d) The Fire Chief, or his or her designee;

(e) The Purchasing Agent, or his or her designee;

(f) The Director of Information Systems, or his or her designee;

(g) The Metropolitan Sheriff, or his or her designee;

(h) The Director of Public Works, or his or her designee;

(i) The Director of Water & Sewerage Services, or his or her designee;

(j) The Director of Parks & Recreation, or his or her designee; and

(k) The Director of the Office of Emergency Management, or his or her designee.

3. The Police Department, Fire Department, and N.E.S. are expected to be the major users of the System. The Department of General Services will have the major operating and maintenance responsibilities for the System. Therefore, these four (4) agencies will be the lead agencies on the Committee and shall have two (2) votes each. The other agencies shall have one (1) vote each.

4. The Director of General Services shall serve as Chair. The Committee shall select a Vice Chairman from another agency who will serve for a term of one (1) year. The Committee shall adopt any additional rules for internal governance it deems necessary. The staff services to the Committee will be provided by the Department of General Services.

5. The mission of the Metro Emergency Management Committee shall be as follows:

(a) Develop and implement guidelines for the allocation of effective and efficient use of the System, including the loading and development for all users.

(b) Determine the accurate maintenance and operating costs for the System and then recommend a plan to access each user a fair and proportionate share to recover these costs.

(c) Develop and recommend guidelines to the Director of Finance and N.E.S. for the creation and maintenance of a reserve fund to cover unanticipated expenses and improvements to the System.

(d) Provide long-range planning for the ultimate retirement and replacement of the System.

Effective Date. This Executive Order shall become effective on the 23rd day of August, 1999.

Philip Bredesen
Mayor

THE METROPOLITAN GOVERNMENT OF NASHVILLE AND DAVIDSON COUNTY

BILL PURCELL, MAYOR

EXECUTIVE ORDER NO. 18

SUBJECT: Creation of the Metro Emergency Radio Management Committee

WHEREAS, the Metropolitan Government and the Nashville Electric Service (N.E.S.) embarked on a project to purchase, construct and operate a 800 MHZ trunked radio system (the "System") to improve emergency dispatch and response throughout Davidson County; and

WHEREAS, even though the digital radio technology that will eventually be used in the System provides greater efficiency in the use of radio bandwidth, the license issued to the Metropolitan Government by the Federal Communications Commission provides only a limited radio bandwidth to the Metropolitan Government; and

WHEREAS, in order to utilize the System to its fullest potential and preserve its availability for emergency use, the Metropolitan Government must efficiently manage and control access to the System; and

WHEREAS, in December 1997, the Metropolitan Government and Nashville Electric Service entered into a Memorandum of Understanding which included a provision for a joint committee to manage the access to and operation of the 800 MHZ trunked radio system; and

WHEREAS, in August 1999, Executive Order Number 99-06 was adopted establishing the Metro Emergency Radio Management Committee to provide an organized structure to manage the System.

NOW, THEREFORE, I, Bill Purcell, Mayor of the Metropolitan Government of Nashville and Davidson County, by virtue of the power and authority vested in me, do hereby direct and order the following:

1. That the Metro Emergency Radio Management Committee created by Executive Order Number 99-06 is hereby continued and will have the mission, operate and be composed as provided in this Executive Order.

2. The membership of the Metro Emergency Radio Management Committee shall be as follows:
   a. the Director of General Services, or his or her designee;

   b. a representative selected by N.E.S.;

   c. the Chief of Police, or his or her designee;

   d. the Fire Chief, or his or her designee;

   e. the Purchasing Agent, or his or her designee;

   f. the Director of Information Systems, or his or her designee;

   g. the Metropolitan Sheriff, or his or her designee;

<ol type="a" start="8">
the Director of Public Works, or his or her designee;
the Director of Water & Sewerage Services, or his or her designee;
the Director of Parks & Recreation, or his or her designee;
the Director of the Office of Emergency Management, or his or her designee;
the Director of the Emergency Communications Center, or his or her designee;

<ol start="3">
The Police Department, Fire Department, Emergency Communications Center and N.E.S. are expected to be the major users of the System. The Department of General Services will have the major operating and maintenance responsibilities for the System. Therefore, these five (5) agencies will be the lead agencies on the Committee and shall have two (2) votes each. The other agencies shall have one (1) vote each.

The Director of General Services shall serve as Chair. The Committee shall select a Vice Chairman from another agency who will serve for a term of one (1) year. The Committee shall adopt any additional rules for internal governance it deems necessary. The staff services to the Committee will be provided by the Department of General Services.

The mission of the Metro Emergency Management Committee shall be as follows:
<ol type="a">
Develop and implement guidelines for the allocation of effective and efficient use of the System, including the loading and development for all users.
Determine the accurate maintenance and operating costs for the System and then recommend a plan to access each user a fair and proportionate share to recover these costs.
Develop and recommend guidelines to the Director of Finance and N.E.S. for the creation and maintenance of a reserve fund to cover unanticipated expenses and improvements to the System.
Provide long-range planning for the ultimate retirement and replacement of the System.

Ordered, Effective and Issued:

Bill Purcell
Metropolitan Mayor

Date: November 19, 2002

THE METROPOLITAN GOVERNMENT OF NASHVILLE AND DAVIDSON COUNTY

KARL F. DEAN, MAYOR

EXECUTIVE ORDER NO. 029

SUBJECT: Emergency Radio Management Committee

I, Karl Dean, Mayor of the Metropolitan Government of Nashville and Davidson County, by virtue of the power and authority vested in me, do hereby amend former Mayor Purcell Executive Order No. 018 and Mayor Bredesen Executive Order No. 99-06 and find, direct and order the following:

I. The Metropolitan Government and the Nashville Electric Service (N.E.S.) embarked on a project to purchase, construct and operate a 800 MHZ trunked radio system (the "System") to improve emergency dispatch and response throughout Davidson County; and

II. Even though the digital radio technology in the System provides greater radio bandwidth, the license issued to the Metropolitan Government by the Federal Communications Commission provides only a limited radio bandwidth to the Metropolitan Government; and

III. In order to utilize the System to its fullest potential and preserve its availability for emergency use, the Metropolitan Government must efficiently manage and control access to the System; and

IV. In December 1997, the Metropolitan Government and Nashville Electric Service entered into a Memorandum of Understanding that included a provision for a joint committee to manage the access to and operation of the 800 MHZ trunked radio system.

1. There is a Metropolitan Government Emergency Radio Management Committee for the Metropolitan Government of Nashville and Davidson County.

2. The membership of the Metropolitan Government Emergency Radio Management Committee shall be as follows:

a. The Director of General Services, or his or her designee;
b. A representative selected by N.E.S.
c. The Chief of Police, or his or her designee;
d. The Fire Chief, or his or her designee;
e. The Purchasing Agent, or his or her designee;
f. The Director of Information Systems, or his or her designee;
g. The Metropolitan Sheriff, or his or her designee;
h. The Director of Public Works, or his or her designee;
i. The Director of Water & Sewerage Services, or his or her designee;
j. The Director of Parks & Recreation, or his or her designee;
k. The Director of the Office of Emergency management, or his or her designee;
l. The Director of the Emergency Communications Center, or his or her designee;

3. The Police Department, Fire Department, Emergency Communications Center and N.E.S. are expected to be the major users of the System. The Department of General Services will have the major operating and maintenance responsibilities for the System. Therefore, these five (5) agencies will be the lead agencies on the Committee and shall have two (2) votes each. The other agencies represented on the Committee shall have one (1) vote each.

4. The Director of General Services shall serve as Chair. The Committee shall select a Vice Chairman from another agency who will serve for a term of one (1) year. The Committee shall adopt any additional rules for internal governance it deems necessary. The staff services to the Committee will be provided by the Department of General Services.

5. The mission of the Metropolitan Government Emergency Management Committee is as follows:

a. Develop and implement guidelines for the allocation of effective and efficient use of the System, including the loading and development for all users.
b. Determine the accurate maintenance and operating costs for the System and then recommend a plan to assess each user a fair and proportionate share to recover these costs.
c. Develop and recommend guidelines to the Director of Finance and N.E.S. for the creation and maintenance of a reserve fund to cover unanticipated expenses and improvements to the System.
d. Provide long-range planning for the ultimate retirement and replacement of the System.
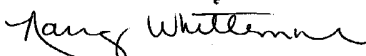
Ordered, Effective and Issued:

Karl F. Dean
Mayor

Date: March 17, 2008

800 MHz Radio Systems
Standard Operating Procedures

APPENDIX 2 – Sample Access Request Form

Document Section:	**Appendices**	Tech Committee Review
Sub-Section:	**Appendix 2**	Date: 07/10/2009
Procedure Title:	**Access Request Form**	
Date Established:	07/19/2007	MRAM Approval - Signature:
		Nancy Whiteman
Date Revised:	03/08/2012	Date: 7/19/2012

This is an abbreviated sample of the actual request form.
An official form should be requested from MRC for completion.

Name of Agency, Department, or Organization:
Primary Address:
Primary contact information:
Contact Person:
Telephone Number:
Email Address:

How many units require access?

Portables _____ Mobiles _____ Control Points _____ Consoles _____

Please provide answers to the following questions as needed for your specific request.

☐ Are you requesting INTEROPERABILITY with the Metropolitan Government?
   Please explain why.
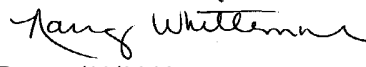
☐ **Do you require User Level System Access, i.e., your own Talk group(s)? _____**
   If so, how many, and why?

If you require interoperability with other User Groups please check the associated box and explain your need for this access for each group.

☐ Nashville Electric Service
☐ Metro Fire/EMS
☐ Metro Police
☐ Metro Office of Emergency Management
☐ Unified Command of Fire, Police, and Office of Emergency Management
☐ Beer Board
☐ Board of Education
☐ Codes Department
☐ Juvenile Court
☐ Park Rangers
☐ Public Works
☐ Sheriffs' Office
☐ City of Belle Meade Police
☐ City of Berry Hill Police
☐ Other Agency Not Listed

800 MHz Radio System
Standard Operating Procedures

APPENDIX 3 – Radio Zone Aliases

Document Section:	**Appendices**	Tech Committee Review
Sub-Section:	**Appendix 3**	Date: 07/10/2009
Procedure Title:	**Radio Zone Alias Table**	
Date Established:	07/19/2007	MRAM Approval - Signature:
		Nancy Whitemore
Date Revised:	03/08/2012	Date: 7/19/2012

Agency	Zone Designation
800MHz INTEROP	**800 INTEROP**
A ZONE	**A**
Airport	**APT/AIRPORT**
Beer Board	**BEER**
Belle Meade	**BELMEADE**
Berry Hill	**BERRY HL**
US Army Corps Of Engineers	**CORPS**
D.A.	**DA**
E.C.C.	**ECC**
Fire Dispatch	**FB DISP**
Fire Tactical	**FC TOCs**
Fire Admin	**FD ADMIN**
General Hospital	**GEN HOSP**
General Services	**GEN SVCS**
Goodlettsville	**G'VILLE**
Health Department/Animal Control	**HEALTH**
Hospitals	**HOSPITAL**
Juvenile Court	**JUVINILE**
LaVergne	**LV**
Medical Examiner	**MEDEXMNR**
M.T.A.	**MTA**
NES	**NES**
O.E.M.	**OEM**
Park Police	**PARK PD**
Public Works	**PUB WRKS**
Police	**PD**
Schools	**SCHOOLS**
Sheriff Dept.	**SHERIFF**
Taxi - Wrecker	**TAXI**
TSU	**TSU**
Traffic Violations	**TRAFVIOL**

Vanderbilt PD	**VANDY**
Water Services	**WATER**
A ZONE EMERG BACKUP	**Z1**
FIRE EMERG BACKUP	**Z2**
POLICE EMERG BACKUP	**Z3**
OTHER EMERG BACKUP	**Z4**

800 MHz Radio System
Standard Operating Procedures

APPENDIX 4 – Radio User Aliases

Document Section:	**Appendices**	Tech Committee Review
Sub-Section:	**Appendix 4**	Date: 07/10/2007=9
Procedure Title:	**Radio User Aliases**	
Date Established:	07/19/2007	MRAM Approval - Signature:
		Nancy Whitleman
Date Revised:	07/10/2009	Date:07/16/2009

800 MHz SYSTEM NAMING PREFIXES

Alias	Agency	I.D. START	I.D. END
AP ###### M	AIRPORT MOBILE	744670	744703
AP ###### P	AIRPORT PORTABLE	755400	755510
AP ###### CP	AIRPORT CONTROL POINT	757220	757230
BE ###### M	BOARD OF ED MOBILE (SECURITY)	733800	733810
SS EMPLOYEE #	BOARD OF ED PORTABLE (SECURITY)	745200	745239
SS ###### P	BOARD OF ED PORTABLE (SECURITY)	745200	745239
	BOARD OF CONTROL POINTS	756001	757000
SCHT (BUS #) M	BOARD OF ED TRANSPORTATION MOBILES	735500	736500
SCHT (EMPLOYEE #) P	BOARD OF ED TRANSPORTATION PORTABLES	754410	754509
BOH ###### M	BOARD OF HEALTH MOBILE	734200	734214
BOH ###### P	BOARD OF HEALTH PORTABLE	749400	749449
BB ###### M	BEER BOARD MOBILE	734300	734304
BB ###### P	BEER BOARD PORTABLE	755000	755004
BM ###### M	CITY OF BELLE MEADE PD MOBILE	743685	743701
BM ###### P	CITY OF BELLE MEADE PD PORTABLE	754696	754713
BM ###### CP	CITY OF BELLE MEADE PD CONTROL POINT	743685	743685
BH ###### M	CITY OF BERRY HILL PD MOBILE	743728	743742
BH ###### P	CITY OF BERRY HILL PD PORTABLE	754749	754764
BH ###### CP	CITY OF BERRY HILL PD CONTROL POINT	743735	743735

BW#####CP	**BRENTWOOD POLICE DEPARTMENT CONTROL POINT**	**755728**	**755728**
BW ##### P	**BRENTWOOD POLICE DEPARTMENT PORTABLE**	**748000**	**748019**
C ##### P	**CODES**	**760000**	**760100**
DCR#####P	**DAVIDSON COUNTY RESCUE SQUAD**	**746121**	**746130**
DA ##### M	**DISTRICT ATTORNEY MOBILE**	**734400**	**734414**
DA ##### P	**DISTRICT ATTORNEY PORTABLE**	**745300**	**745314**
DA ##### CP	**DISTRICT ATTORNEY CONTROL POINT**	**755808**	**755808**
ECC	**EMERGENCY COMM. CENTER MOBILE**	**734500**	**734519**
	EMERGENCY COMM. CENTER PORTABLE	**746000**	**746040**
	EMERGENCY COMM. CENTER CONTROL POINT		
FBI ##### P	**F.B.I. PORTABLE**	**745400**	**745424**
Various	**FIRE DEPT MOBILE**	**720000**	**723007**
Different	**FIRE DEPT PORTABLES**	**723008**	**727007**
Ones.	**FIRE DEPT CONTROL POINTS**	**727007**	**727935**
FMP DECAL # M	**FLEET MOTOR POOL MOBILE**	**744600**	**744620**
NAME	**FLEET MOTOR POOL PORTABLE**	**745650**	**745669**
FMP ##### P	**FLEET MOTOR POOL PORTABLE**	**745650**	**745669**
FP#####CP	**CITY OF FRANKLIN PD CONTROL POINT**	**755731**	**755731**
GH ##### P	**GENERAL HOSPITAL**	**746100**	**746119**
	GENERAL SESSIONS COURT ADMN	**745631**	**745640**
GVF ##### M	**GOODLETTSVILLE FIRE MOBILE**	**744640**	**744669**
GVF ##### P	**GOODLETTSVILLE FIRE PORTABLE**	**754900**	**754919**
GVF ##### P	**GOODLETTSVILLE FIRE PORTABLE**	**755680**	**755695**
GVP#####M	**GOODLETSVILLE POLICE MOBILE**	**744501**	**744520**
GVP ##### P	**GOODLETTSVILLE POLICE PORTABLE**	**749600**	**749660**
JC DECAL# M	**JUVENILE COURT MOBILE**	**734310**	**734328**
JC EMPLOYEE # P	**JUVENILE COURT PORTABLE**	**755010**	**755040**
JCWHS## P	**JUVENILE COURT PORTABLE WACKENHUT SEC**	**755010**	**755040**
JCIV-D##P	**JUVENILE COURT PORTABLE IV-D OFFICE**	**755010**	**755040**
JC ##### CP	**JUVENILE COURT CONTROL POINT**	**734329**	**734330**
LW DECAL # M	**CITY OF LAKEWOOD POLICE MOBILE**	**734360**	**734369**

LW EMPLOYEE #	**CITY OF LAKEWOOD POLICE PORTABLE**	**745270**	**745280**
ME400P	**MED-EXAMINER PORTABLE**	**754600**	
ME411P	**MED-EXAMINER PORTABLE**		
MEDEXA#P	**MED-EXAMINER PORTABLE**		**754605**
MILPD#####P	**MILLERSVILLE POLICE PORTABLE**	**745611**	**745611**
CONVCTR745488P	**NASHVILLE CONVENTION CENTER**	**745488**	**745488**
Various	**NES MOBILES**	**700001**	**701007**
Different	**NES PORTABLES**	**701008**	**702015**
Names	**NES CONTROL POINTS**	**702016**	**703023**
OEM	**VARIOUS NAMES WORKING ON IT.**		
	OEM MOBILE	**731088**	**731583**
	OEM PORTABLE	**731584**	**732095**
	OEM CONTROL POINT	**732098**	**732190**
ESU ###	**OEM'S ESU'S ANALOG UNITS**	**759857**	**759949**
OHS ##### P	**OFFICE OF HOMELAND SECURITY**	**754400**	**754409**
	GOVERNOR'S OFFICE.		
OPL ###### M	**OPRYLAND MOBILE**	**734352**	**734352**
OPL ###### P	**OPRYLAND PORTABLE**	**734350**	**734351**
CSX######P	**CXS RAILROAD PORTABLE**	**733497**	**733497**
ATF ###### P	**ALCOHOL TAX FIREARMS PORTABLE**	**745351**	**745360**
SFB ###### P	**STATE FAIR BOARD PORTABLE**	**745480**	**745484**
RC ###### P	**RED CROSS PORTABLE**	**745600**	**745601**
MJ ###### P	**CITY OF Mt. JULIET POLICE PORTABLE**	**745420**	**745729**
MJ ###### P	**CITY OF Mt. JULIET POLICE PORTABLE'S THAT BELONG TO WEMA**	**753500**	**753509**
MJ ###### CP	**CITY OF Mt. JULIET POLICE CONTROL POINT**	**755720**	**755720**
USPP ###### P	**UNITED STATE COURTS PARDONS & PAROLE**	**746200**	**746209**
USSS ###### P	**SECRET SERVICE PORTABLE**	**755570**	**755579**
PW DECAL # M	**PUBLIC WORKS MOBILE**	**733727**	**733799**
PW ###### P	**PUBLIC WORKS PORTABLE**	**744730**	**744830**

PR DECAL # M	PARK RANGER MOBILE	733696	733726
PRBASE	PARK RANGER CONTROL POINT	733702	733702
PR EMPLOYEE # P	PARK RANGER PORTABLE	744704	744728
PD DECAL # M	POLICE MOBILE	710000	713007
PD EMPLOYEE # P	POLICE PORTABLE	713008	717007
NAME	POLICE CONTROL POINT	717008	717999
RADSHP ### M	RADIO SHOP MOBILE	733200	733391
RADSHP ### P	RADIO SHOP PORTABLE	733392	733599
SEMA ##### P	SUMNER COUNTY EMG. MANG. AGENCY PORTABLES	745612	745621
SEMA ##### CP	SUMNER COUNTY EMG. MANG. AGENCY CONTROL POINTS	755736	755738
SPEV ##### P	SPECIAL EVENT UNITS	755200	755299
T-DOT ##### M	T-DOT MOBILE	733860	733889
T-DOT ##### P	T-DOT PORTABLE	754782	754788
STAB ##### M	STATE OF TENN. ARSON & BOMB MOBILE	734100	734109
STAB ##### P	STATE OF TENN. ARSON & BOMB PORTABLE	754765	754776
STAB ##### P	STATE OF TENN. ARSON & BOMB PORTABLE	754811	754831
STDC#####M	STATE OF TENN. DEPT OF CORRECTION MOBILE	734150	734164
TBI ##### M	TENNESSEE BUREAU INVESTIGATION MOBILE	743501	743505
TBI ##### P	TENNESSEE BUREAU INVESTIGATION PORTABLE	744901	744975
TBH ##### P	TENNESSEE BOARD OF HEALTH PORTABLE	746300	746319
TDEC#####P	TN DEPT. OF ENVIRONMENT AND CONSERVATION	754777	754777
STFR ##### P	STATE OF TENNESSEE FOREST RANGER PORTABLE	754780	754780
STFR ##### P	STATE OF TENNESSEE FOREST RANGER PORTABLE	754794	754805
STPP ##### P	STATE OF TENNESSEE PARDONS AND PAROLE	754790	754793
OIG####M	OFFICE OF INSPECTOR GENERAL MOBILE	734241	734260
OIG####P	OFFICE OF INSPECTOR GENERAL PORTABLE	755101	755114

TEMA ##### M	TEMA MOBILE	734701	734801
TEMA ##### P	TEMA PORTABLE	746450	746550
SD DECAL # M	SHERIFF OFFICE MOBILE	730000	730511
SD ##### P	SHERIFF OFFICE PORTABLE	730512	731007
	The Sheriff Office has changed Alias		
	See second attachment.		
SAP#####M	SMYRNA AIROPRT MOBILE	734670	734679
SAP#####P	SMYRNA AIRPORT PORTABLE	746570	746579
STC ##### P	STATE TRIAL COURT PORTABLE DIGITAL	733404	733406
STC ##### P	STATE TRIAL COURT PORTABLE ANALOG	760260	760300
TCMC ##### P	TENNESSEE CHRISTIAN MEDICAL CENTER PORTABLE	754200	754200
TCMC ##### CP	TENNESSEE CHRISTIAN MEDICAL CENTER CONTROL POINT	755820	755820
Portables	Hospitals like this are under Hospital Command	754200	754229
Control Points	Hospitals like this are under Hospital Command	755820	755839
TNARNG##P	TENNESSEE AIR NATIONAL GUARD COUNTERDRUG		
	DIVISION	746591	746600
THP ##### P	TENNESSEE HIGHWAY PATROL PORTABLE	745500	745550
TSU##### CP	TENNESSEE STATE UNIVERSITY	755761	755765
TSU##### M	TENNESSEE STATE UNIVERSITY	734901	734930
TSU##### P	TENNESSEE STATE UNIVERSITY	746901	746950
TW DECAL # M	TAXI-WRECKER BOARD MOBILE	734336	734340
TW ##### P	TAXI-WRECKER BOARD PORTABLE	755046	755050
TVB ##### P	TRAFFICE VIOLATIONS BUREAU PORTABLE	745250	745259
USM ##### P	UNITED STATE MARSHALL PORTABLE	745450	745479
VN ### VULF	VANDY LIFE FLIGHT	733895	733899
V ##### M	VANDY MOBILE	733900	733974
VANDY BASE	BASE AT VANDY	755712	755712
V ##### P	VANDY PORTABLE	745000	745155

WEMA ###### M	WEMA WILSON COUNTY	743900	743919
	EMERGENCY MANAGEMENT MOBILES		
WS EMPLOYEE # OR LOCATION P	WATER SERVICES PORTABLE ANALOG	761000	761199
WS EMPLOYEE # OR LOCATION P	WATER SERVICES PORTABLE DIGITAL	745780	745789

800 MHz Radio System
Standard Operating Procedures

APPENDIX 5 – Radio User Fees

Document Section:	**Appendices**	Tech Committee Review
Sub-Section:	**Appendix 5**	Date: 07/12/2012
Procedure Title:	**Radio User Fees**	
Date Established:	07/19/2007	MRAM Approval - Signature:
		Nancy Whittemore
Date Revised:	07/01/2012	7/19/2012

Service	Unit of Measure	Unit Cost
800 Mhz System Access		
- Generic	Per Radio Per Mo.	$8.22
- Interconnect	Per Radio Per Mo.	$8.22
- Data	Per Radio Per Mo.	$8.22
- A V L	Per Radio Per Mo.	$8.22
- UHF/VHF	Per Radio Per Mo.	$3.22
Subscriber Radios		
		$0.22
Installation/Removal		
- Radio Only	Per Install	$62.56
- Sargeant	Per Install	$140.77
- Patrol Car	Per Install	$359.74
- Detective	Per Install	$281.50
- Covert	Per Install	$281.54
- Drug/Utility	Per Install	$344.10
- Motorcycle	Per Install	$0.00
- Fire w/ AVL	Per Install	$187.70
- EMS w/ AVL	Per Install	$344.09
- Removals	Per Removal	$117.77
- Swap-outs	Per Job	$0.00
Programming	Per Radio	$27.53
Maintenance Plan		
- Radio Only	Per Vehicle Per Mo.	$5.10
- Patrol	Per Vehicle Per Mo.	$13.17
- Sargeant	Per Vehicle Per Mo.	$11.47
- Detective	Per Vehicle Per Mo.	$8.93
- Covert	Per Vehicle Per Mo.	$10.20
- Drug/Utility	Per Vehicle Per Mo.	$10.20
- Motorcycle	Per Vehicle Per Mo.	$6.80

- Fire w/ AVL	Per Vehicle Per Mo.	$13.60
- EMS w/ AVL	Per Vehicle Per Mo.	$13.60
- Portable	Per Radio Per Mo.	$3.40
- Control Station	Per Sta Per Mo.	$17.00
- MOSCAD (Fire)	Per Unit Per Mo.	$8.50
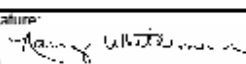
<u>Field/Custom Projects</u>   Per Hour $40.01

<u>Parts</u>   Percent Mark-Up   20.91%

Document Section:	Appendices	TC Recommended:	
Sub-Section:	Appendix 6	Date:	5/10/2007
Procedure Title:	Fall-back In-Cabinet Repeat Channel Activation		
Date Established:	7/19/2007	MRAM Approval - Signature:	
Replaces Document Dated:			
Date Revised:		Date:	7/19/2007

Fall-Back In-Cabinet Repeat Channel Activation Priority List

System A Channels	1	2	3	4	5	6	7	8	9
FBICR 1	Compton	Compton	Compton	Compton	Compton	Sullivan's	Joelton	Compton	Compton
FBICR 2	Virginia	Virginia	Virginia	Virginia	Virginia	Compton	Greer	Virginia	Virginia
FBICR 3	Sullivan's	Sullivan's	Sullivan's	Sullivan's	Sullivan's	Virginia	Virginia	Sullivan's	Sullivan's
FBICR 4				Joelton		Pasquo			

System A Channels	10	11	12	13	14	15	16	17	18
FBICR 1	Virginia	Cane Ridge	Compton	Virginia	Compton	Compton	Compton	Compton	Compton
FBICR 2	Compton	Compton	Virginia	Greer	Virginia	Virginia	Virginia	Virginia	Virginia
FBICR 3	Cane Ridge	Virginia	Sullivan's	Compton	Sullivan's	Sullivan's	Cane Ridge	Sullivan's	Sullivan's
FBICR 4									

System B Channels	1	2	3	4	5	6	7	8	9
FBICR 1	Compton	Compton	Compton	Compton	Compton	Compton	Compton	Sullivan's	Compton
FBICR 2	Virginia	Virginia	Virginia	Virginia	Virginia	Virginia	Virginia	Joelton	Virginia
FBICR 3	Sullivan's	Sullivan's	Sullivan's	Sullivan's	Sullivan's	Sullivan's	Sullivan's	Compton	Sullivan's
FBICR 4									

System B Channels	10	11	12	13	14	15	16
FBICR 1	Compton	Compton	Virginia	Compton	Compton	Sullivan's	Compton
FBICR 2	Virginia	Virginia	Compton	Virginia	Virginia	Compton	Virginia
FBICR 3	Sullivan's	Sullivan's	Cane Ridge	Sullivan's	Sullivan's	Joelton	Sullivan's
FBICR 4							

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APPENDIX 7 – Contacting Radio Communications

Document Section:	**Appendices**	Tech Committee Review
Sub-Section:	**Appendix 7**	Date: 07/10/2009
Procedure Title:	**Contacting Radio Communications**	
Date Established:	07/19/2007	MRAM Approval - Signature:
	07/10/2009	*Nancy Whitteman*
Date Revised:	03/08/2012	Date: 7/19/2012

Use one of the following methods to contact MRC personnel for service, access, equipment installation, and lost radio notification:

- During normal working hours, Monday – Friday, 7:30AM – 4:00PM
  call direct to (615) 862-5111.
- Outside of normal working hours, or to make emergency service requests contact OEM
  Operations at (615) 862-8530

Physical Addresses:

Vehicle and Subscriber Maintenance
Radio Communications Shop, Metro Southeast
1417 Murfreesboro Pike
Nashville, TN 37217

Field Services and System Operations
Radio Communications Field Office
2060 15th Avenue South
Nashville, TN 37212

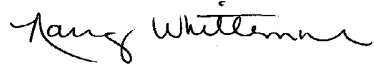Mailing Address:
Metro Radio Communications
P.O. Box 196300
Nashville, TN 37219-6300

Other important numbers:
Main Shop Office   (615) 862-5111
Main Shop Fax   (615) 862-5123
Field Service Office   (615) 862-8561
Field Service Fax   (615) 880-3494
After Hours (OEM Ops)   (615) 862-8530

APPENDIX 8 – Site Access Agreement

Document Section:	**Appendices**	Tech Committee Review
Sub-Section:	**Appendix 8**	Date: 07/10/2009
Procedure Title:	**Site Access Agreement**	
Date Established:		MRAM Approval - Signature:
		Nancy Whittemore
Date Revised:	07/10/2009	Date:07/16/2009

Metro Radio Communications
Tower Site Access Request Form

This form <u>must</u> be completed by all personnel and vendors requiring access to Metro Radio Communications tower sites.

Name: _____   Date: _____ / _____ / _____

Company: _____

Department: _____

My signature on the line below indicates that <u>I have read and completely understand</u> the following, and will abide by these rules regarding access to any Metro Radio Communications tower site.

1. Access to the sites is tightly controlled and entry to those sites is granted only to those personnel with proper authorization from MRC. Entry alarms at the remote sites immediately alert MRC personnel of any intrusions.

2. A tower site access list shall be maintained by MRC, and be kept up to date, including vendor support staff. The site access list will be closely monitored. A person will be denied unsupervised access to any site if that person is not identified on the access list.

3. Vendors must ensure their personnel are properly authorized and are on the current authorization list prior to dispatching someone to work at a tower site. An unauthorized technician will only be allowed access to a site when accompanied and supervised by one with the proper authorization. All unauthorized personnel at any tower site will be under the supervision of MRC authorized staff.

4. All personnel must pass a FBI background check before unsupervised access is granted to any Metro Radio Communications facility.

5. Site access shall not be unreasonably denied to Metro agency support staff, which is responsible for maintaining their agency's equipment located at that site.

6. External devices (computers, modems, routers etc) are not connected to the system network without the approval of MRC.

7. Site access is not unreasonably denied to outside agency support staff, but is closely monitored and can require escort by MRC staff. Outside agencies requiring site access are required to coordinate all site visits with MRC staff during normal working hours. <u>After hours access is tightly controlled and is generally discouraged unless it is an emergency situation.</u>

8. Access to any site without first contacting MRC is prohibited, and shall result in disciplinary action against the offending agency and can result in removal of the agency's equipment and total site restriction, or loss of contract privileges.

9. Any agency or vendor with access to any tower site or equipment location shall make immediate notification to MRC of urgent issues such as discharged employees or cancelled contracts.

10. The physical security of equipment and structures making up the core of the radio system infrastructure is paramount to the reliability and availability of communications carried on the system. Each site is within a fenced, gated and locked compound, with shelter entry monitored and reported to a central monitoring point through the MOSCAD alarm and control system. A remote controlled camera system is installed at each site.

11. Any person requiring access to the tower sites for any reason shall have full clearance from MRC, or be accompanied and monitored by a MRC authorized technician while there.

12. MRC reserves the right to dispatch law enforcement personnel at any time to ensure security of the tower sites.

I further signify that I understand and accept the risks involved with the possible exposure to radio frequency emissions, and all other personal hazards involved within the confines of the site, and I hereby release Metro Nashville Government, its employees and officials from any and all liability from access to any tower site or structure, and any injuries that might occur from the same.

Signature: _____

Date: _____/_____/_____

800 MHz Radio Systems
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Glossary- Definitions and Acronyms

Document Section:	**Glossary - Definitions and Acronyms**	Tech Committee Review
Sub-Section: Procedure Title:		Date: 07/10/2009
Date Established:	07/19/2007	MRAM Approval - Signature:
Date Revised:	03/08/2012	Date: 7/19/2012

1. Purpose or Objective
To clarify some of the terms, acronyms, and abbreviations used throughout this manual.

2. Definitions (in alphabetical order)
The following definitions are provided to aid with understanding of the terms used throughout this manual, and denote to the way in which those terms are used within the context of this manual.

About ME – Metro Nashville personnel database, updated regularly by the individual employees and imported into the LDRPS disaster plan.

ACU1000 – An audio gateway device capable of connecting disparate radio systems/channels/talkgroups together during on-scene operations, similar to a console patch between talkgroups

Alias – A common alphanumeric name used to identify a radio, talkgroup, site, etc. rather than referencing the assigned 6 digit ID number

Channel – A pair of frequencies, transmit and receive, that are used for a single communications path

Channel Bank – A device that combines multiple data and/or audio inputs into TDMA format so that it can be transmitted over a T1 circuit and shared between transmitter sites

Code 5000 – The Metro term for activation of the emergency button on a radio, which alerts the dispatcher to an emergency situation involving that radio user

Codeplug – The firmware that holds the unique personality for a system, device, or radio unit, and can be reprogrammed to change operational parameters as needed.

Control Station – A fixed radio unit normally found at a desk or common work area indoors or directly connected to a console or other fixed transmitting location.

Console – A fixed radio operator position with multiple radio resources and features that can access any subset of talkgroups and/or conventional channels

Consolette – A mobile radio mounted into a case and converted for desk-top use

Conventional – non-trunked radio communication, either through a repeater system or radio-to-radio

Direct – Radio-to-radio transmission and reception on a single frequency

Eligible Agency – A local unit of government, emergency medical service provider, or special purpose government agency

Encryption – The intentional scrambling or coding of a radio signal to prevent unauthorized reception of secure communications, which requires all transmitting and receiving radios to contain the same code or 'key' with which to communicate with each other.

Failsoft – A fallback means of radio communications if a site or radio system can not perform normal trunking operations

Fleetmap – The master spreadsheet plan of the talkgroups, zones, Failsoft assignments, alias information and other pertinent system and radio programming

Gateway Device – A dispatch console, ACU-1000, or other audio device capable of electrically connecting any number of separate radio conversations to each other, also referred to as a 'radio patch'.

Infrastructure – All of the fixed electrical and mechanical equipment, towers and building structures, transmitters, controllers, antennas, microwave and ancillary equipment that comprise the operational backbone of the radio system

Interconnect – Also telephone interconnect, a radio option which provides mobile and portable radios the capability to connect to and place calls on an outside telephone network

Interoperability – The capability to communicate with units from other systems, other frequency bands, and other agencies as required with existing equipment

Logging – the act of recording radio conversations for replay as required

Metro – Metropolitan Nashville and Davidson County Government

Mobile Radio – A vehicular mounted radio with an external power source and antenna

Microwave – A point-to-point, directed radio energy beam on which multiple radio signals or data streams are delivered between remote locations

Mission Critical - Those operations which are reliant upon a functioning two-way radio communications system which unavailability, degradation, delay or failure, partial or complete, would significantly impact and/or impair the successful delivery of vital services or missions

Multi-select - Electrically connecting two or more radio channels or talkgroups so that a dispatcher can monitor and communicate to those separate resources without users on those resources being able to communicate with each other

P25 – a suite of standards for digital radio communications for use by federal, state/province and local public safety agencies in North America to enable them to communicate with other agencies and mutual aid response teams in emergencies.

Patch – Electrically connecting two or more radio channels or talkgroups so that those users of those separate resources are able to communicate with each other

Pre-qualification – a review by MRAM to determine if a specific request is valid and has enough merit to be considered fully by the committee, such as an agency requesting more data capacity, or a private company requesting system access

Portable Radio – A lightweight, completely self contained radio unit usually worn on the user's belt or other similar fashion

Public Safety – An agency, department, or individual directly involved with the health, safety, and/or security of the public including, but not limited to police, fire, emergency management, and medical personnel and responders

Public Service - An agency, department, or individual involved with providing non-emergency type services to the public including, but not limited to utilities, transportation, education, and other governmental services not critical to public safety

Radio User – The person or unit to which a radio is assigned and aliased

Rebanding – The term given to the process of reconfiguring and retuning public-safety 800MHz radio systems to mitigate harmful interference from the Nextel system, due to the close proximity of the 800MHz frequencies used in those systems

Repeater – a type of radio station in which subsequently retransmits any signal received on a different frequency

Subscriber – an individual radio of any type assigned and aliased on the system

Simulcast – A type of trunking radio communications in which voice/data to be transmitted is sent to multiple sites and is transmitted simultaneously to provide wide area coverage

Site – The physical location of an antenna tower, equipment shelter and radio system infrastructure equipment which is electronically linked via microwave radio to the master and other satellite sites.

Storm Plan – A system function to re-group talkgroups for special situations, such as disasters, or crowd control

System Access – The ability to utilize the radio system for radio communication is divided in two categories: limited and full participation. Limited participation is normally defined as utilizing the

system only for the purposes of interoperability with Metro agencies, and/or for purposes of mutual aid.

Talkaround – A conventional mode of single frequency, point-to-point, radio-to-radio communications, also referred to sometimes as 'direct' mode

Technical Committee – A sub-committee of MRAM that reviews and makes recommendations on all issues of a technical nature that affect operations of the radio system that come before MRAM.

Trunked/Trunking – The automatic and dynamic sharing of a number of communications channels between large numbers of radio users

Tactical Interoperable Communications Plan – was developed to promote quick and easily accessible mutual aid type communications between agencies within an area defined by the plan itself

Talkgroup – A unique trunked radio system resource normally representing or dedicated to a specific user agency or function, on which radio communications are conducted, similar in operation to a conventional radio channel. Talkgroups can contain an unlimited number of radio units.

Uninterruptible Power Source – a battery back-up device that provides emergency power to connected equipment by supplying power from a separate source when utility power is not available.

Zone – An area in the radio template containing positions for 16 individual talkgroups or conventional radio channels which is normally labeled by an acronym that closely represents the owner agency, as defined in Appendix 3.

3. Acronyms and Abbreviations
The following is provided to aid with understanding of the acronyms and abbreviations used throughout this manual, and denote to the way in which those terms are used within the context of this manual.

8CALL90 – International CALLing channel on 800 MHz
8TAC91-94 – International TACtical channel(s)
ACU1000 – Raytheon Audio Gateway Device
APCO – Association of Public-Safety Communications Officials
ATAC – AstroTac Comparator
AVL – Automatic Vehicle Location/Locator
CEB – Console Electronics Bank
CTCSS – Constant Tone Controlled Squelch Circuit, also called PL for Private Line
DIU – Digital Interface Unit
ECC – Emergency Communications Center
EME – Electro-magnetic energy or emission
EMS – Emergency Medical Service
FBICR – Fall Back in Cabinet Repeat
FAA – Federal Aviation Administration
FCC – Federal Communications Commission
HR – Human Resources
ID – IDentification number or
IP – Internet Protocol
LDRPS – Living Disaster Recovery Planning Software
MFD – Metro Fire Department
MHz - Megahertz
MNPD - Metro Nashville Police Department
MRAM – Metro Emergency Radio Management Committee
MRC – Metro Radio Communications
MTUG – Motorola Trunked Users Group
NES – Nashville Electric Service
NPSPAC – National Public-Safety Planning Advisory Committee

OJT – On-the-job Training
PCIA – Personal Communications Industry Association
PE – Professional Engineer
PL – See CTCSS
PSAP – Public-Safety Answering Point
PSWN – Public-Safety Wireless Network Program
PTT – Press-to-talk
RCM – Radio Control Module
RF – Radio Frequency
RSS – Radio Service Software
TC – Technical Committee
TDMA - Time Division Multiplex Addressing
TICP – Tactical Interoperable Communications Plan
UCALL – UHF CALLing channel
UHF – Ultra-High Frequency
UTAC41-43 – UHF TACtical channel(s)
VCALL10 – VHF CALLing channel
VHF – Very-High Frequency
VTAC11-14 – VHF TACtical channel(s)